

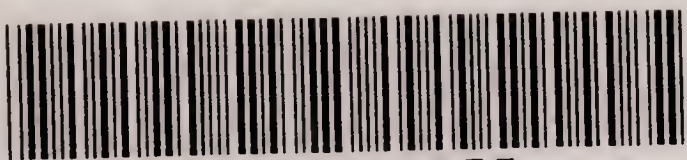
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department of National  
Health  
and  
Welfare

ANNUAL REPORT  
for the fiscal year ended  
march 31, 1956

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CANADA

**THE DEPARTMENT OF  
NATIONAL HEALTH AND WELFARE**

**ANNUAL REPORT**

**FOR THE FISCAL YEAR  
ENDED MARCH 31**

**1956**

**Edmond Cloutier, C.M.G., O.A., D.S.P.,  
Queen's Printer and Controller of Stationery  
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*To His Excellency the Right Honourable Vincent Massey, C.H., Governor General and  
Commander-in-Chief of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of National Health and Welfare for the fiscal year ended March 31, 1956.

Respectfully submitted,

PAUL MARTIN,  
*Minister of National Health and Welfare.*



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*To the Honourable Paul Martin, Q.C., M.P., LL.M., LL.D., D.C.L., Minister of National Health and Welfare, Ottawa.*

SIR:

With the responsibilities of the Department of National Health and Welfare continuing to grow, the past year was marked by new or accelerated activities in a number of fields, all of which will have a significant and lasting effect upon the health and welfare of the Canadian people.

On January 26th the Prime Minister announced to the House of Commons the federal Government's proposal to the Provinces covering hospital insurance and laboratory, radiological and other diagnostic services. By the year-end two Provinces had indicated readiness to accept the federal proposal and elsewhere it was under study.

The year also saw the first widespread application of poliomyelitis vaccine which was released for provincial use following rigid safety and potency testing carried out by both the Connaught Laboratories and the department's Laboratory of Hygiene. From a trial procedure it became recognized as a useful public health measure, and the progressive extension of immunization programs gave promise of the effective control of paralytic poliomyelitis.

During the year the Department continued its role in the supervision of radioactive isotopes and gave advice on many health aspects of the use of radiation. In addition, resulting from the increasing interest in the biological effects of radiation, the Department initiated a program for studying the genetic and short-term effects of radiation and began routine analysis of radioactive strontium in food substances.

On the welfare side the year was most strikingly marked by the federal government's offer to share with the Provinces the cost of Unemployment Assistance. By the end of the year five Provinces had signed agreements. The same period saw the completion of the first full year's operation of the Disabled Persons Act.

The department's expenditures during 1955-56 rose to \$840.9 million, an increase of \$36.7 million over the previous year. The increase was almost entirely accounted for by higher statutory expenditures under the Family Allowances Act, the Old Age Security Act, and the Disabled Persons Act, and by an increase in payments under the National Health Program of \$1.9 million.

In concluding this letter of transmittal we again draw your attention to the generally high standard of competence and integrity of the staff. The degree to which the Department has been able to retain the services of certain key people in the face of increasing outside financial inducement reflects commendable loyalty to the public service. In other circumstances many of the achievements recorded in this report would not have been possible.

Respectfully submitted,

G. D. W. CAMERON,  
*Deputy Minister of National Health  
and Welfare (Health)*

G. F. DAVIDSON,  
*Deputy Minister of National Health  
and Welfare (Welfare)*

OTTAWA, Canada.





# HEALTH BRANCH

## Introduction

The reports of individual divisions of the Health Branch which follow cover the functions and activities of the branch in some detail. They also indicate into which of three broad categories they fall: administration of certain federal Acts; statutory responsibility for services; or financial, technical or advisory assistance to the Provinces in promoting a broad health program of national scope.

Since the significance of some constantly-recurring changes in emphasis is apt to be lost in a detailed presentation, it seems wise to review briefly in the introduction such subjects as seem particularly important or of special current interest.

### Poliomyelitis

Salk poliomyelitis vaccine was used extensively in Canada this year for the first time. The manner in which it was introduced was unique in the history of immunization programs and presented problems which compounded the difficulties ordinarily expected in such a procedure. Sound scientific practice requires careful and prolonged preliminary studies to identify immunologic and production problems and permit their resolution before a new preparation may be offered to the public. Additionally a sufficient store of knowledge is accumulated to enable broad immunization programs to go forward in orderly fashion. In the case of the Salk vaccine, however, the intense public interest which had been stimulated forced emphasis upon producing as much of the vaccine as possible for practical use. Problems which arose in relation to its immunologic properties, production and testing had to be dealt with on a day-to-day basis.

Throughout the spring and early summer of 1955 just over 1,850,000 doses of the vaccine were produced at the Connaught Medical Research Laboratories and by the end of June provincial immunization programs had generally been concluded. This early completion of the programs permitted an excellent opportunity for a broad study of the effectiveness of the vaccine, but the low incidence of paralytic poliomyelitis, the lowest in ten years, materially influenced the findings in a number of the provinces. While the results in such areas lacked the degree of significance that would have been desirable, in other Provinces in which the incidence of poliomyelitis approached the average for previous years, the findings were significant. With this favourable indication of the protective value of the vaccine, plans were made for the resumption of the polio immunization programs during the following year.

### Pollution and Environmental Health

Among the less dramatic but highly important activities of the Department are those in the fields of Public Health Engineering and Environmental Health. The rapid development of Canada's natural resources and industrial capacity has created tremendous problems in water supplies, sanitary services and the control of industrial and domestic wastes on a large scale.

Responsibility for administration of the Public Works Health Act involves the close scrutiny of numerous construction camps on such projects as the St. Lawrence Seaway, Gagetown and the Mid-Canada radar sites of the Department of National Defence. The establishment of new townsites and the relocation of some old ones in the rapidly devel-



oping north, such as Whitehorse and Aklavik, has required much careful study and consultation with other departments and agencies. Low temperature conditions characteristic of these regions preclude the use of many conventional methods and designs and have created entirely new and interesting problems in distribution, treatment and disposal facilities.

The growing menace of pollution of water supplies and atmosphere is causing great concern, not only in this country but throughout the western world. The demand for research and technical advisory service and assistance is constantly on the increase. The Department is not only keeping abreast of developments but is taking steps to build up a well-qualified staff and facilities capable of giving assistance and leadership in this important field at all levels of government.

Co-operation on an international basis is illustrated by the pollution studies carried on for some time in the Windsor-Detroit area under the general authority of the International Joint Commission.

### **Health Insurance**

A great deal of public interest in the subject of health insurance was shown during the past year. Discussions at the highest government levels required much detailed background information and for a great part of the year the Divisions of Health Insurance Studies and of Research and Statistics were completely occupied in its collection and arrangement in orderly and intelligible form. Information regarding existing programs, types of programs which might be proposed and estimates of costs of various proposals, required careful study and sometimes presentation in considerable detail.

While it would be quite impossible for the divisional reports to convey in any adequate way the extent of the research and study involved, it seems fair to state that the relatively clear picture of the major implications of a national scheme which evolved from the conferences would not otherwise have been possible.

Further consideration or adoption of some federally-assisted plan would, of course, have a number of implications for the future organization and administration of the Department. While much would depend on the type of proposal adopted it seems clear that the scope of the problem and the positions of the Department in the health field would involve it deeply in the provision of leadership, technical advice, consultation and assistance to the Provinces in performing a difficult task as effectively as possible.

### **National Conferences**

Two significant conferences were held under the auspices of the Department in the course of the year under review.

The Nutrition Conference was the second of its kind to be held in ten years. It attracted about 200 professional people from all parts of Canada for discussion of experience and exchange of information on nutritional subjects as applied to all the allied disciplines in the field of health.

The conference of federal and provincial Maternal and Child Health workers held early this year was the first of its kind under departmental auspices. The most active discussions centred on prenatal education, hospital care of the newborn and graduate training of nurses in maternal and newborn care.

These conferences were interesting and significant because they illustrated the increasing interest at the practical or field level in these important aspects of national health. They also represent the fruits of the long-term educational program of the Department in the respective fields and the effective role it can play in co-ordinating provincial programs.



Financial Provision

A breakdown is appended of the total estimates for the Health Branch for the year under review as well as for the preceding year, for purposes of comparison.

The apparent reduction in the provision for co-operation with Provinces represents no essential change in services but is due to the recent change in government procedure under which certain capital expenditures are now provided for in the estimates of the Department of Public Works rather than in the estimates of this Department.

NATIONAL HEALTH BRANCH ESTIMATES

For 1954-55 and 1955-56

	1954-55	Percentage	1955-56	Percentage
STATUTORY OBLIGATIONS.....	\$ 4,373,119	7.9	\$ 4,555,072	7.8
Quarantine and Leprosy.				
Immigration Medical Services.				
Sick Mariners Treatment Services.				
Public Health Engineering.				
Civil Service Health.				
Administration of the Food and Drugs and the Proprietary or Patent Medicine Acts.				
Administration of the Opium and Narcotic Drugs Act.				
CO-OPERATION WITH PROVINCES.....	2,124,185	3.8	1,912,517	3.2
Laboratory of Hygiene.				
Occupational Health.				
Epidemiology.				
Special Technical Services.				
Health Insurance Studies.				
MISCELLANEOUS GRANTS.....	168,850	0.3	177,450	0.3
Grants to Institutions Assisting Sailors.				
Grants to Health Organizations.				
GENERAL HEALTH GRANTS.....	31,750,001	57.2	33,750,000	57.7
INDIAN HEALTH SERVICES.....	16,920,538	30.5	17,159,026	29.3
NORTHERN HEALTH SERVICES.....	....	....	815,230	1.4
NATIONAL HEALTH BRANCH-ADMINISTRATION.	162,430	0.3	170,050	0.3
	<u>\$55,499,123</u>	<u>100%</u>	<u>\$58,539,345</u>	<u>100%</u>

(Totals include Supplementary Estimates and allotment from Finance General Salaries Vote).

FOOD AND DRUGS

FOOD AND DRUG DIRECTORATE

GENERAL

An important item in the program of the Food and Drug Directorate during the past year was the move of the headquarters staff in Ottawa to the new Food and Drug Building at Tunney's Pasture. This building houses the Food and Drug Directorate, including the Proprietary or Patent Medicine Division. This is the first time in its history of eighty-two years that the Food and Drug administration has had adequate quarters in Ottawa.

While the field of work of the Food and Drug Directorate remains the same, the emphasis on various problems changes as circumstances require. Since the new Food and



Drugs Act became effective in July 1954 more time and effort have been devoted to factory inspection in both the food and drug industries. This work is another phase of the endeavour to provide Canadians with pure, clean foods and safe drugs. It is the responsibility of manufacturers and others handling these commodities to supply foods free from filth and harmful substances and drugs that are properly controlled during their preparation. One of the jobs of the Directorate is to see that they do.

The use of many new insecticides and other products designed to prevent destruction of food has greatly expanded during the last ten years. While their use may be necessary or helpful to farmers, food processors and packers, their presence in or on food presents a health hazard to the public if measures are not taken to make sure that they are not on the food as consumed, or that, if some residue remains, it is there only in an amount that is not harmful. Manufacturers of such products are required to provide adequate information to permit the establishment of safe tolerances. The appropriate staff of the Laboratory Services Division examines all such information, makes its own analyses and tests to check the data supplied and to elucidate obscure points and then recommends a tolerance that is safe under conditions of use for which the product is to be sold. This tolerance is included in the Food and Drug Regulations.

Checking fruits, vegetables and other foods to make sure that the tolerance is not exceeded provides a large amount of work for regional and headquarters laboratories. This laboratory work involves the development and use of many new methods, both chemical and biological and this too, is a major undertaking.

The project or survey system of enforcement begun several years ago both in inspection and laboratory work is being developed and made more effective. Much less time than formerly is now devoted to "ad hoc" problems in the regions. It will not be possible to establish rigid programs to fully occupy regional or even headquarters staffs. Problems arise suddenly that must be dealt with promptly even though surveys or projects must be temporarily discontinued or minimized in doing so. Customs work and investigation of complaints also require a considerable amount of time and must not be delayed.

As in the past the staff of the Food and Drug Directorate has given assistance to other government departments and in some instances to international organizations interested in food and drug problems. Members of the Directorate take part in the scientific activities of the World Health Organization, the United Nations Narcotic Commission, the British Pharmacopoeia Commission, the United States Pharmacopoeial Commission, the United States Committee on the National Formulary, the Association of Official Agricultural Chemists, and other foreign or international bodies. Consultations have been held with the United States Food and Drug Administration, the United States Public Health Services and the British Ministries of Food and Health. There have been many consultations with, and work has been done for, the Departments of Agriculture, Fisheries, National Revenue, National Defence, Veterans Affairs and the Royal Canadian Mounted Police.

Meetings have been held of the Drug Advisory Committee, the Advisory Board on Proprietary and Patent Medicines and of a joint committee with members of the Technical Committee of the Canadian Pharmaceutical Manufacturers Association. There have been consultations by correspondence with some members of the Advisory Panel on Drugs.

### Consumer Relations

Since the purpose of the Food and Drugs Act is primarily consumer protection against health hazards and fraud in the advertising, sale and use of foods, drugs, cosmetics and medical devices, it is most important that consumers and the general public



be aware of the existence of this organization so that they may know where to bring their complaints and their problems. During the past year some progress was made in consumer relations. Members of regional offices and head office gave lectures to such groups as service organizations, home and school associations, professional and trade societies, made use of radio and television, and provided material for news reports and articles dealing with the Directorate's work.

Two pamphlets, one on prevention of accidental poisoning from chemical substances in the home and one on quackery, were produced and 79,165 copies of other pamphlets were distributed to the public through exhibitions, home economists, schools, universities and institutions. A booklet is being prepared by the medical section on the composition of poisonous substances in the home and their antidotes, for use by hospitals and clinics giving emergency treatment in poisoning cases. Displays depicting the work of the Directorate were shown at exhibitions, conventions and universities across Canada. It is planned to extend such activities when additional staff and facilities are available.

### Medical Section

The number of new drug submissions received from manufacturers during the year was 148, approximately the same as in the previous two years. During the same period 17 submissions were withdrawn by manufacturers when sufficient evidence as to safety or to satisfy other requirements of the Food and Drug regulations was not produced. Submissions were made for 16 other products which eventually were not classified as new drugs. Canadian clinicians were more active in the clinical evaluation of new drugs during the year, 78 such drugs having been imported into Canada for this purpose.

Work was begun on the compilation of a Poison Control Manual which is to be used in conjunction with the Canadian Paediatric Society in a Poison Control Program. The manual will contain a listing of the poisonous ingredients of all the proprietary or patent medicines and the everyday household chemicals on the market in Canada. The compilation will indicate the nature of the potentially toxic ingredient along with recommended therapeutic measures to be instituted.

The medical section also maintained liaison with the Canadian Medical Association, the Canadian Paediatrics Society, the American Medical Association, and the Medical Division of the United States Food and Drug Administration in relation to food and drug problems. Advice on medical subjects was given in connection with food and drug advertising and the registration of proprietary or patent medicines.

### Regions

The major share of enforcement work is carried out in the five regions into which Canada is divided for purposes of administering the Food and Drugs Act and the Proprietary or Patent Medicine Act. In addition to enforcement work the regional officers maintain close contacts with the trade and public and with other government departments both provincial and federal. They have collected information, carried out surveys, interviewed representatives of business, industry and the public and have kept headquarters informed of trends and developments of interest in administration. Like all other branches of the Directorate their function is educational as well as administrative and regulatory. A tabular summary of the regulatory work of the regions is included at the end of the Directorate's report.

Special training courses have been given to regional laboratory and inspection personnel covering new phases of their work, especially in the field of insecticide determinations, inspections of plant sanitation and inspection of drug plants.



In the regions a large part of the time devoted to domestic products was spent in surveys or projects such as inspections of food plant sanitation and drug plant control systems and analytical work on selected types of foods and drugs.

Addresses and lectures outlining the purpose and activities of the Food and Drug Directorate were given to special groups and to the general public at meetings and by radio or television.

A regional directors' conference was held in Ottawa to discuss policy and plan work for the succeeding year.

## INSPECTION SERVICES

Inspection work during the year followed a program in which priorities were given to food and drug plant sanitation and to determining the controls exercised by drug manufacturers over the safety and composition of their products. A considerable amount of the usual inspection work was also carried out.

### Food Plants

Two thousand three hundred visits were paid to food factories, some of these being repeat visits to the same plants. As an indication of the magnitude of the problem, there are an estimated ten thousand food manufacturing plants in Canada. Only a few major industries in which there are the greatest potential health hazards have been included in the program so far. Inspection has shown sanitation standards to vary widely among plants in a particular industry from quite clean and satisfactory to disgusting and dangerously dirty. Repeat visits following warnings have been encouraging in that, in a significant number of factories found to be unsatisfactory on the first visit, action has been taken by the management to clean up. This has been accomplished so far without use of the penalties provided by the Food and Drugs Act.

### Drug Plants

Following a preliminary survey of drug plants last year, priority for inspection and educational work was given to those companies manufacturing products for injection and to private formula manufacturers since, in these groups, there exists the greatest risks to health. Two hundred and fifty inspections were made in this program. Repeat visits indicated some improvement in factories where it was most desirable and steady progress was made in others. When dealing with these manufacturers, emphasis continues to be on the establishment of proper control procedures from receipt of raw materials to finished products so that the public may always have safe and effective drugs.

### Liaison with other agencies

Efforts have been made to keep other agencies interested in factory sanitation, especially provincial and municipal departments, fully informed of activities in this field. Many inspections have been carried out jointly with inspectors from these departments. This policy will prevent unnecessary duplication of work and will be much more effective in securing improvements.

### Legal Actions

While educational methods were used to secure compliance whenever the circumstances permitted, it was found necessary to prosecute in 58 cases and 21 seizures of goods were made.



## Labelling and Advertising

Special attention was given to the labelling and advertising of dietetic foods, since false and misleading advertising of these products has an especial health hazard. Other labelling and advertising received attention as usual both in the regions and at Ottawa. The headquarters staff examined 2,500 labels, 536 advertisements and packages and 19,300 radio and television commercials.

## Customs and Imports

Samples were taken from imports only when an inspector had reason to believe there was a violation of the law. The figures given in the appended tables are, therefore, not representative of the condition of all shipments arriving in Canada from abroad.

## Discussions with Public and Trade

Various aspects of enforcement were discussed with representatives of the consumers and the industries concerned. There were many hundreds of interviews with trade representatives to discuss the status of particular products.

## ADMINISTRATIVE SERVICES

Continuous attention was given to the improvement of mailing lists required for the distribution of trade information letters and other circulars. During the year 72,465 copies of 14 trade information letters were mailed. The index of registrations under the Proprietary or Patent Medicine Act was maintained. A catalogue of drug manufacturers and rulings on the labelling of foods and drugs were indexed for ready reference. Various reports were compiled and distributed.

The stenographic pool prepared much material, mostly on technical subjects, containing many tables. Control was exercised over about 4,500 stores items, including equipment, chemicals, stationery and furniture, and 1,100 requisitions for purchases were handled.

Clerical and stenographic services were supplied to Laboratory and Inspection Services Divisions and records of accounts, prosecutions and other enforcement actions, the preparation of the *Food and Drug News* and handling of amendments to regulations were continued as usual.

## PROPRIETARY OR PATENT MEDICINE DIVISION

This division administers the Proprietary or Patent Medicine Act which governs the manufacture and sale of secret formula prepared medicines offered to the public under proprietary or trade names. All preparations sold under this Act must be registered and are licensed on a yearly basis. During the year the registration of 3,269 preparations was reviewed. Two hundred and one new medicines were examined for registration; one hundred and thirty-nine were approved and sixty-two rejected.

Over 15,000 newspaper advertisements have been reviewed by this division. These are taken from twenty newspapers received daily from the main cities across Canada. Three hundred advertisements containing misrepresentations or exaggerated claims were brought to the attention of the manufacturer and have been corrected. In addition approximately 1,200 labels, wrappers and other advertisements were criticized. One thousand four hundred and twenty radio commercials were reviewed in cooperation with the Canadian Broadcasting Corporation which requires that radio announcements dealing with proprietary medicines be approved by the department before broadcasting.



Samples are secured on the open market by Food and Drug Inspectors and examined as to quality and quantity of drugs and labelling. Irregularities in composition, labelling, recommendations or methods of merchandising are reported to the headquarters of the department.

In 1954 the department, on the advice of the medical advisers in cooperation with the Advisory Board under The Proprietary or Patent Medicine Act and the Canadian Advisory Committee on Drugs, decided to refuse registration under the Act to any preparation containing strychnine. In the case of existing preparations which contained strychnine an opportunity was given to manufacturers to make appropriate changes in their formulae to omit strychnine, or to substitute therefor another non-toxic but suitable drug. This project has now been completed, and as of January 1, 1956 no proprietary or patent medicine containing strychnine has been distributed by manufacturers to wholesale or retail outlets.

Throughout the year manufacturers were interviewed to discuss problems arising out of present requirements, and through these meetings cooperation of the trade has been maintained, resulting in improved standards of proprietary medicines. Assistance was also extended to the federal, provincial and other officials concerned with the administration of laws and regulations otherwise relating to the sale of such products.

A meeting of the Proprietary or Patent Medicine Advisory Board was held during the year as usual. This board, consisting of eminent physicians and pharmacists, advises the department on specific matters concerning the administration of the Act.

## LABORATORY SERVICES

There are five regional laboratories and two district laboratories concerned mainly with enforcement work and secondly, with collaborative work and investigations. The district laboratories are used mainly for screening tests but they make final tests on a number of imports to shorten the time these products are detained at customs.

The chief concern of the central laboratory at headquarters is research and investigation and secondly, regulatory work and the review of information submitted by manufacturers for new drugs and insecticides.

Analyses of foods, drugs and cosmetics are made in the regional laboratories. The laboratory in Ottawa carries out chemical, physical and biological work necessary for investigations into new products, for the development of methods of analysis or assay and for collection of information regarding proposed standards for both food and drugs. Collaborative work on new methods is carried out between regional and headquarters laboratories. Special surveys and projects are assigned to regional laboratories including examinations and analyses of products sold locally or on a national scale. A constant review of the scientific literature pertaining to foods, drugs and cosmetics is done by the members of Laboratory Services. A continuing examination in the Laboratory Services of the requirements of the regulations keeps them in line with modern industrial practices and provides maximum protection for the consumers against any dangers inherent in new processes or the use of new substances.

It is to be noted that there is a trend in the cosmetic industry to add medicinal ingredients to cosmetics and to claim remedial properties for such products. If therapeutic claims are made for cosmetics they must be treated as drugs according to the definitions in the Food and Drugs Act.

## General

The physiological availability and disintegration time of coated tablets has been under continued investigation by the Pharmaceutical Chemistry and Vitamin and Nutrition Sections. As a result of findings reported last year, discussions have been held with the Technical Committee of the Canadian Pharmaceutical Manufacturers Asso-



ciation with a view to setting up regulations on the disintegration time of tablets. A method has been agreed upon for the determination of disintegration time. Consideration is now being given to writing a regulation based on the 60-minute time limit. Such a regulation will ensure that tablets are physiologically available.

It has been noted that, during the year, there has been an increasing number of tablets and capsules put on the market for which claims are made that the medication is released at various times from immediate release to 10 or 12 hours. Since no published data appears to be available on such preparations, consideration is being given to the development of procedures to determine the rate of release and physiological availability of medication in such preparations. Enteric coated tablets are also being given further study.

A continuation of the collaboration between the Organic Chemistry Section and the Food Chemistry Section on the methods for identifying the geographical origin of opium has strengthened the work of previous years on this important international problem. The methods devised and compiled in this laboratory have received recognition by the United Nations Committee dealing with narcotic drugs in international commerce.

Collaborative work between the Organic Chemistry and the Cosmetics and Alcoholic Beverages sections on constants and methods for characterization of essential oils is producing data long needed by those in control and regulatory work.

### Organic Chemistry Section

Research on methods of isolation, purification, identification, characterization and quantitative estimation of drugs, including alkaloids, narcotics, barbiturates and other drugs with addiction potentialities and toxic properties, was continued. A process for characterizing opium to determine its origin when seized in the illicit traffic has been worked out. This process combines United Nations methods for determining amounts of alkaloids present, analysis of the ash by spectrographic and spectrophotometric techniques. Data based on opiums of 14 different countries of origin have been assembled and placed on punched cards. Unknowns received in the laboratory are analysed and by means of the coded and sorted cards, origins are determined. The methods have been tested on 87 "unknowns" comprised of authentic, and seized samples, and new types of opium. Ninety-five percent of the samples were correctly identified as to their origin.

Advisory work on the international opium research program, cannabis and synthetic narcotic drug problems for the Canadian Representative on the United Nations Narcotic Drug Commission has been carried out for the past two years. A special brief entitled "Scientific research and its relation to enforcement of Narcotic Drug Law" was submitted to the Special Senate Committee on Traffic in Narcotic Drugs. At the invitation of the United Nations Commission on Narcotic Drugs, Canadian scientists in the Food and Drug Laboratories who had worked on the opium origin research submitted their expert opinions regarding the reliability of methods and certainty with which opium origins could be made, using these methods.

Special studies of chemical and physical methods for identifying *dl*-3-hydroxy-N-methyl morphinan and its *laevo* and *dextro* isomers and a number of barbiturates have been published.

Infrared, ultraviolet and X-ray data on drugs, foods and cosmetic products are being assembled in a comprehensive reference library of standards. Collections of infrared spectra of 70 barbiturates, 85 narcotics, ultraviolet spectra of 87 narcotics, and X-ray data on 83 narcotics have been supplied to the American Society for Testing Materials and incorporated into their punched card system. Some of this material has been collected with the assistance of other government laboratories.



In collaboration with other sections of the laboratory infrared spectroscopy has been applied to the following food and drug problems; detection of staphylococcus toxins, characterization of animal tissues and histological preparations; identifications of pharmaceutical products and food colours. Results of several of these investigations have been published.

### Pharmaceutical Chemistry Section

Again, during the past year, a considerable amount of time was devoted to the development and application of assays based on the principles of nonaqueous titrimetry. These techniques permit the direct analysis of many acids and bases which are too weak to titrate in water.

Despite the extensive amount of work which has been done by the many workers in the field of nonaqueous titrimetry, the salts of organic bases have presented considerable difficulty both from the standpoint of solubility in organic solvents as well as the shortage of suitable indicators. A method was developed in this laboratory that permitted direct analysis of many sulphates, nitrates and phosphates of organic bases, particularly those of alkaloids. The work has been published.

In addition to the foregoing, a new nonaqueous method was developed which permitted the direct titration of the barbiturates and their commercial products. Unlike other methods, this technique also permits direct assay of the barbiturates in coloured products as well as those combined with certain other drugs such as aminophylline. The results of the investigation have been accepted for publication.

Para-aminosalicylic acid and its salts have gained popularity in recent years as tuberculostatics. Investigation on these drugs resulted in the development of procedures permitting their direct titration in nonaqueous solvents. A number of commercial products were assayed and most of them were found to be satisfactory.

The analysis of quaternary ammonium compounds has for some time presented a serious problem. A method has been devised in this laboratory, whereby the compound could be assayed by ultra-violet spectrophotometry. The application of this method to commercial products showed all those tested to be satisfactory.

Collaborative work has been conducted at various times throughout the year for the Revision Committee of the United States Pharmacopeia, the British Pharmacopoeia Commission and the World Health Organization. The purpose of such work is to assist in the establishment of new standards for certain drugs as well as to help devise new methods of analysis for others.

Of the 122 pharmaceuticals which were analysed for enforcement purposes, 87 were satisfactory and 35 were unsatisfactory; 17 samples were analysed for the Department of National Defence, the Department of Veterans Affairs and the Ontario College of Pharmacy. Technical information was provided for several successful prosecutions.

### Food Chemistry Section

The increasing use of organic chemicals for protecting food crops from insect pests and fungi has indicated the urgent need for analytical methods capable of detecting minute residues in or upon foods. Available methods are being evaluated in order to select the most satisfactory procedures for future use. In addition to being highly sensitive, a method should also be free from errors caused by the presence of plant constituents or other pesticides. After extensive testing, the Schechter-Haller procedure has been chosen for the analysis of DDT. Methods for other insecticides and fungicides are currently being evaluated.



During 1955, a survey was initiated to ascertain the amounts of some of these residues on fruits. Samples at various stages of maturity were analysed for DDT, parathion and malathion the most widely used insecticides and also for captan, a prominent fungicide. Residues on ripe fruits were found to be within safe limits.

Maleic hydrazide is a chemical capable of preventing the sprouting of potatoes, onions and other vegetables during storage. Maleic hydrazide may not be used in Canada because doubt exists as to its safety. Since the existing procedure for estimating maleic hydrazide was unsatisfactory, a modification was developed which avoids the shortcomings of the original procedure. The new method, capable of detecting one part per million of maleic hydrazide has been employed satisfactorily for the analysis of potatoes and onions.

Butylated hydroxytoluene was recently approved as an antioxidant for use in fats. It was therefore necessary to develop analytical procedures capable of determining butylated hydroxytoluene in the presence of the other permitted antioxidants; propyl gallate, nordihydroguaiaretic acid, butylated hydroxyanisole and the tocopherols. Superheated steam distillation isolates butylated hydroxytoluene and butylated hydroxyanisole from the fat and these are estimated by differential chemical analysis. Propyl gallate and nordihydroguaiaretic acid are extracted from the fat in carbon tetrachloride solution using alcohol, followed by analysis with newly developed reagents. These new procedures are capable of analysing all permitted combinations of these antioxidants, in the amounts added to fats.

Polyoxyethylene emulsifying agents are added to foods to improve their texture and keeping quality. These compounds form a precipitate with phosphomolybdic acid but the procedure based upon weighing the amount of precipitate formed is tedious and subject to serious errors. A more convenient method, based upon new isolation procedure followed by the colorimetric determination of molybdenum in the precipitate, has been developed. This procedure has been widely used for the analysis of polyoxyethylene emulsifiers in bread. Polyoxyethylene emulsifiers have recently been proposed for improving the reconstitution of milk powders. Therefore, the colorimetric procedure has been extended to yield qualitative indications of the presence of polyoxyethylene emulsifiers in milk powders.

Zinc can be determined spectrographically in foods. Since many laboratories do not have a spectrograph, it was considered necessary to develop a chemical method for zinc. Since many metals interfere in the estimation of zinc, it was necessary to develop a procedure for isolating zinc from the ash of biological materials. A new colorimetric reagent, 4-chlororesorcinol, was also developed for estimating the amount of zinc present. This new procedure has been applied satisfactorily to the estimation of zinc in a number of food products.

Due to the toxic effects of consuming excessive amounts of fluoride, additional work has been done to improve existing analytical methods. A procedure for absorbing and concentrating fluoride on magnesium oxide has been improved. This technique greatly facilitates the analysis of very dilute fluoride solutions and in addition is valuable in separating fluoride from chloride, sulphate and other interfering ions. This technique has been used for estimating the fluoride content of a variety of food products.

The study of the composition of opium ash has been continued with the analysis of a further 75 samples. The accumulation of data on the composition of opium ash permits the extended use of this proven procedure for the identification of opium samples of unknown origin.

The significance of the sodium content of the diet upon the health of persons suffering from certain types of circulatory disorders is well established. A survey of 70 food samples, representing a wide variety of dietary products has been completed



in order to gather information on the sodium content of foods specially prepared for the use of persons on a sodium-restricted diet.

The composition of frozen meat pies has been the subject of an extensive survey. Since frozen meat pies are a new item on the Canadian market, it was felt necessary to gather data to form the basis for a standard, if required.

Additional work has been done to improve the methods for estimating the fruit content of strawberry and raspberry jams. The seed count, insoluble solids and potassium oxide procedures are being studied to determine whether these are reliable indices of fruit content.

## Microbiology Section

The main research interests have continued to be centered on the staphylococci. A comparison of some 400 strains of mannitol-positive micrococci isolated from dairy products and from hospital patients has shown that most isolates from the former source are of bovine origin whereas the phage group most commonly found among the clinical isolates was group III. Group IV of bovine origin occurred with a frequency of less than one percent among the hospital isolates, though members of this group were the most consistent and most potent producers of the A- and B- hemolysins and enterotoxin. It would seem, therefore, that a factor other than the production of these toxins determines the primary invasiveness of staphylococci to man.

Toxins were produced by representatives of six species of the genus *Micrococcus* (after Bergey), but only in small amounts by species other than *M. pyogenes*. Even though the production of coagulase was the more consistent indicator of enterotoxigenicity, the production of coagulase and phosphatase were not directly comparable in their indication of toxigenic strains and neither was absolute in relation to production of a specific toxin. Enterotoxin (cat-test) was produced by isolates of species other than *M. pyogenes* and by a small proportion of coagulase-negative strains of *M. pyogenes*. These facts should be appraised in making an analysis of the micrococci associated with foods suspect in food-poisoning.

The production of acid from glucose under anaerobic conditions did not seem to be a reliable indicator of the genus *Staphylococcus* as suggested by Evans and Niven.

The recognition of Staphylococcal enterotoxin by infrared spectrophotometry has been described. Further infrared work with specific cell fractions and culture extracts in relation to toxin production continues.

A statistical appraisal of a swab-method for the detection of specific bacterial contamination on factory surfaces has been completed.

A discursive treatment of the function and limitations of microbiological standards for foods based in part on data and experience from this laboratory has been prepared and published. The point of view of the Directorate and its collaborative objective in relation to control of sanitation in food factories was presented to eleven meetings of provincial agencies and industrial and professional groups. A country-wide survey of the problems and research needs of the food industry in relation to food preservation was made under the aegis of the Canadian Committee on Food Preservation.

The following publications from the Section either alone or in collaboration with other Sections appeared during the year: Studies with staphylococcal toxins. I. A reappraisal of the validity of the "kitten test" as an indication of staphylococcal enterotoxin. II. The specificity of enterotoxin. III. The application of paper ionophoresis to the resolution of components of toxic concentrates; The resistance of staphylococci and streptococci isolated from cheese to various antibiotics; Detection of staphylococcus enterotoxin by infrared spectrophotometry; Studies of middle-ear disease in rats. I. Age



of infection and infecting organisms; Microbiological standards for Foods: their function and limitations.

### Pharmacology and Toxicology Section

The testing of food colours for chronic toxicity was continued during the year. Studies on Light Green SF Yellowish, Oil Red XO and Orange SS were completed and the results of this investigation have been published. Investigations on Malachite Green, Nigrosine and New Coccine have also been completed. Currently under study are Amaranth, Tartrazine and Sunset Yellow. These investigations have shown that some of these colours should only be used in foods in very low concentrations.

It has been found in this laboratory that the granulopoiesis-depressant action of aminopyrine could be demonstrated in rabbits concurrently treated with Myleran. In these investigations the chemical determination of desoxyribonucleic acid (DNA) and ribonucleic acid (RNA) in bone marrow has provided evidence which supported the cytological findings on blood and bone marrow. Two other drugs which have been reported to cause agranulocytosis clinically are being studied; these are chloramphenicol and thiouracil. The results obtained so far seem to indicate that the procedure may be useful in screening new drugs for this potential hazard.

The bronchodilator activity of *dl*-epinephrine in terms of *l*-epinephrine has been found to be significantly different from the vasopressor activity. Studies are continuing in order to find out if the difference obtained between the two methods is constant. If this is the case, either method could be used in determining the bronchodilator activity of products containing *dl*-epinephrine.

A study of methods for the assay of reserpine was undertaken during the year. A satisfactory method was found and a survey of market products was made. The results of this investigation have been published.

The light scattering method for the determination of weight average molecular weights of plasma expanders has been the subject of much study. During the year an investigation of the relations between the weight average molecular weight of dextrans and the intrinsic viscosity was completed. The results of this investigation, together with an assessment of the reproducibility of the light scattering method have been published. A collaborative test of the reproducibility of this method between laboratories was initiated and agreement among three of five laboratories was found to be excellent. Further studies to elucidate the causes of disagreement with the other laboratories are contemplated. The unsuspected presence of small amounts of methanol has a profound effect on viscosity measurements on dextran solutions but was without marked influence in light scattering measurements. The results of a detailed study of these relations have been published.

Methods used to assess the molecular size distribution in polyvinylpyrrolidone plasma expanders have been under study. Good progress has been made in the development of a satisfactory procedure using the light scattering technique where special problems are encountered because of the ability of polyvinylpyrrolidone solution to fluoresce. A survey of market samples of polyvinylpyrrolidone plasma expanders has been made.

A series of experiments were initiated to determine the acute toxicity of muscle relaxants in rats pretreated with a few representative insecticides. It was found in these acute experiments that pretreatment with the insecticides augmented the toxicity of some of the muscle relaxants by as much as 189 percent. This work is continuing, along with a feeding experiment with one of the insecticides to determine whether chronic exposure to this insecticide will enhance the toxicity of muscle relaxants.

A satisfactory biological method has been worked out for the assay of adrenolytic activity of ergot alkaloids in some pharmaceutical preparations.



### Biometrics Section

A replacement for the biometrician heading the Biometrics Section was obtained in November, 1955. The Section is being re-organized to contain consulting services on methods and applications of statistics in addition to the development of statistical theory dealing with specific problems of the Directorate. Attention to immediate problems coming to the Section has allowed little time to reduce the backlog accumulated when no statistician was available.

Most collaborative studies to date have been with the Food Chemistry Section. A designed sampling experiment to test agreement between regional laboratories for the examination of cacao beans was carried out. Standard methods of identification of insect damage, parts and filth, have been established and a modification recommended to stabilize mould scoring between laboratories. An experiment designed to locate the point of deviation in method of analysis for the determination of insoluble solids in jams was carried out, resulting in a modification of the procedure. A pilot study on slack fill in cardboard base, paper-wrapped candy bars, carried out in the Biometric Section, established that neither volume nor area is a satisfactory measure but linear measurements on the three dimensions indicate distinct overages. The Toronto Regional Laboratory carried out an experiment specifically designed to test the accuracy and precision of the Howard Cell mould count method for tomato products. Results indicate that the work of examination may be reduced by employing two experienced analysts as checks, hence requiring only a single determination of duplicate cells per analyst per sample.

A study of the relationship between single and multiple tablet weighings and assay for the Pharmaceutical Chemistry Section has begun.

The results of a series of chronic toxicity experiments are being studied preparatory to devising experimental designs applicable to long-term experiments of this type.

An experimental design was drawn up for a factorial diet test on lysine for the Vitamin Section.

Complete statistical analysis was carried out on a laboratory collaborative ephedrine recovery experiment for the Pharmaceutical Chemistry Section.

Analysis of the white cell counts of rats with middle ear disease, for the Animal Pathology Section, indicated significant deviation from the norm for the diseased rats, the late stages of disease being more variable. The blood of all, rather than a sample, of treated and untreated rats in an experiment must be examined as analysis indicated extreme variation of the measurement of a specific type of blood cell.

Analysis of ascorbic acid content of samples of the 1955 pack of tomato juice showed a mean content at least as good as minimum requirements.

Two manuscripts were reviewed for appropriateness of phrasing when quoting statistical results and the statistics supporting one new drug were examined. Advice on six specific applications of analysis of variance was given to the Vitamin Section.

An acceptable Winton Lead Number for a given percentage of vanillin in vanilla extract was established and the size of sample required for the percentage of mineral oil on raisins determined. Graphical procedures for illustrating vitamin content of enriched flours were outlined.

Methods of fitting a straight line when both variables are subject to experimental error was examined for the Vitamin Section together with the definition of terms in an error of potency determination equation. Control chart bounds for 2 x 2 point assays are under study for the Pharmacology and Toxicology Section. The new Duncan range test for grouping means that do not differ significantly has been introduced wherever applicable.



A series of papers outlining the practical applications of sampling methods and statistical analysis is being prepared to assist Laboratory staff and Inspection Services in effective data collection and presentation. The first of these deals with the use of random numbers to guide the selection of samples for examination from a lot and for the arrangement of experimental designs. Examples will be given for all sections of the Directorate together with short-cuts and ways of finding random numbers when no tables are available.

### Physiology and Hormones Section

The relative potency of various adrenal corticoids was determined by the thymus involution method of assay and the results of this investigation were published. A study of the thymolytic action of topically-applied ointments containing either hydrocortisone or 9- $\alpha$ -fluorohydrocortisone indicated that these steroids were absorbed through the skin and exerted a systemic as well as a local effect. The action of salicylate and related compounds on the thymus gland of the weanling rat has been considered. The results so far suggest that only those compounds possessing anti-inflammatory activity cause thymic atrophy. Paper chromatographic techniques have been employed to separate, identify and estimate adrenal cortical steroids. A method based on the reduction of ferricyanide by the  $\alpha$ -ketolic side chain, was developed for the determination of corticoids in pharmaceutical preparations.

The procedure using thymus atrophy as the response was found to be satisfactory for the bioassay of long-acting corticotrophin preparations containing zinc as the retarding agent.

Methods for the detection of estrogenic residues in poultry and animal tissues have received further study. Both 21-day old female rats and adult ovariectomized mice have been used as the test animals. The material under investigation has been administered both orally and parenterally. The assay procedures employing the uterine weight response, were capable of detecting as little as five parts per billion of diethylstilbestrol in the tissue. Chemical methods for the determination of diethylstilbestrol in animal feeds as well as in pharmaceuticals have been studied extensively. A project was initiated to consider the effect of diethylstilbestrol on the body composition of chickens and rabbits. The administration of this estrogen increased the fat content of the chickens but did not have a significant effect on the amount of moisture in the meat of either of these species. Diethylstilbestrol monoglucuronide was isolated from the urine of rabbits given large oral doses of the estrogen. Methods for the isolation and purification of this metabolite have included solvent partitioning as well as chromatographic separation both on paper and columns.

An identity test for methyltestosterone was worked out using an antimony trichloride reagent. An assay procedure was developed for the determination of testosterone and progesterone. This method is based on the chromogen produced by the 2,4-dinitrophenylhydrazones of the respective steroids. Separation of mixtures of testosterone, progesterone and estrogens has been accomplished by paper chromatography and in some cases by paper electrophoresis.

The collaborative assay to establish the potency of the Fourth International Insulin Standard was completed. The value obtained by the mouse convulsion method did not differ significantly from that obtained by pooling the results of the collaborating laboratories.

The bioassay procedure employed for determining the LD<sub>50</sub> of shellfish extracts was published. A collaborative assay is under way to measure the toxicity of the purified shellfish poison.

Electrophoretic patterns were obtained for the serum proteins of fifteen species of animals.



### Animal Pathology Section

Eight thousand nine hundred and twenty-nine sections of tissue were examined microscopically during the year. The tissues were principally from animals on feeding trials of food colours, agranulocytosis-producing drugs, iron and calcium trials, tissue culture specimens, and middle and inner ear specimens. Unusual specimens submitted for histological examination and identification included flies, chicken skin and muscle samples. Several tumors were identified for the Occupational Health Laboratories. The Department of Fisheries submitted several samples of fish for examination of minute black specks contained in the flesh. The specks were identified as parasites surrounded by melanin pigment. Necropsies were performed on 186 animals. Bone marrow examination was made on 60 specimens from rabbits on agranulocytosis-producing drugs with over 100,000 marrow cells being identified and grouped.

Fifty samples of human fat were examined for plasmalogen. This work is being carried out in an attempt to determine the possibility of an existing correlation between estrogen, plasmalogen and atherosclerosis.

An oil granuloma was submitted by the Ottawa General Hospital for recovery and identification of the oil. In collaboration with the Organic Chemistry section, isolation and positive identification of the sample was made.

Collaborative studies with the Ottawa University on cerebellar agenesis in cats are continuing.

Facilities have been made available in this section for routine blood examination of individuals who are working with the X-ray machine and are being subjected to possible excessive X-ray radiation.

A program of preventative vaccination against the important infectious diseases of dogs and cats has been established for animals entering the colony. Observation of strict isolation procedures along with the prescribed course of preventative vaccination should keep these diseases under control. Disease outbreaks encountered in the animal colony during the year were controlled with minimal losses.

The X-ray method of diagnosing middle ear disease developed in this laboratory has been applied successfully as a control method for middle ear disease. There has been a reduction in the incidence of middle ear disease in the last year from over 90 percent of the animals affected to less than four percent.

In addition to the reduction of middle ear disease there has been a corresponding reduction in cannibalism, in the death rate from birth to weaning, and in deaths due to pneumonia. All these factors are attributed to the reduction in the number of animals affected with middle ear disease.

During the year 16,000 rats and 3,000 mice were raised and numerous other animals cared for. The new Food and Drug Building has housed the rat and mouse colonies since June 1955, many months in advance of the occupation of the building by the laboratory and office personnel. The mortality rate prior to 1954 in the rat colony was about 12 percent but the improved breeding and housing facilities available in the new building and the isolation program feasible there has reduced it to one percent in 1955.

### Cosmetics and Alcoholic Beverages Section

*Cosmetics.* In collaboration with Inspection Services many samples of cosmetics were reviewed as regards composition and label claims. The use of several more or less new cosmetic ingredients, having more definitely active properties, is fore-shadowed.



In collaboration with the Organic Chemistry Section and others a paper on "The Physiochemical Characterization of Essential Oil Constituents and their Derivatives by Modern Instrumentation Techniques" has been prepared and will be published shortly. Ultraviolet, infrared and Raman spectra are presented with other data. The preparation of the purified, dust-free samples was carried out by this Section.

*Alcoholic Beverages.* Vodkas of domestic manufacture were placed on the market during the year. Although essentially highly purified alcohol, different vodkas vary slightly, particularly with regard to after-taste. This led to a preliminary attempt to find a physical basis for these differences. They are readily detectable by means of the ultraviolet absorption curves of the samples, but as the "impurities" exist only in parts per million, their determination by chemical means offers difficulties.

The removal of traces of iron and copper from wines was the subject of a fairly extensive review published by the Section in August, 1955. These "trace" metals are troublesome as they cause the wine to become cloudy on storage. In Canada the subject is of less interest than formerly owing to the replacement of iron and copper equipment in the winery by stainless steel.

The proposed use of the antibiotic polymyxin in brewing practice was reviewed. The production of a beer suitable "for low sugar diets" was discussed with interested parties. Such a beer would have an "extract" much below the minimum required by the regulation. It was decided to defer action until some public demand had arisen.

*Food Colours.* The examination and certification of food colours continued. Imports of colours from the United Kingdom showed a marked increase over the previous year. These colours were almost all of high quality and purity. Satisfactory methods of separating mixtures of colours and of separating colours from other material were developed, using a chromatographic column technique. The column was found to be superior to techniques using paper and to electrophoresis.

Considerable numbers of miscellaneous samples (confectionery, cake glazes, coloured paper in contact with foods, etc.) were examined during the year for violations of the Food and Drugs Act.

### Vitamin and Nutrition Section

A continuation of the studies on the utilization of iron in flour by anemic rats has shown that high levels of calcium and low levels of iron in the diet result in lower liver iron values and higher heart weights than the controls. It has been shown also that the presence of two sodium phosphates in the diet did not result in reduced liver iron values. The level of bone meal in commercial enriched flour had no significant effect on such criteria. These results are consistent with reports regarding the effect of calcium and phosphorus on hemoglobin regeneration. Aureomycin has been found to speed up the regeneration of hemoglobin in anemic rats, possibly by increasing the amount of food consumed by the aureomycin-treated rats.

During the year much interest has been focussed on the possible need for the enrichment of cereal foods with lysine and other amino acids. Accordingly, studies with rats have been initiated to evaluate the importance and need for such additions to cereals for child feeding. Preliminary results suggest that lysine additions do not show as great effects when fed with milk diets. Obviously the value of additional amino acids should be judged in the light of the diet as a whole.

In collaboration with the National Research Council further studies on the nutritive value of fat have reaffirmed the observation that a mixture, similar in its proportion of saturated and unsaturated fatty acids to body fat, produces faster growth than other mixtures. The source of the fat does not seem to be of importance. The essential fatty



acid, linoleic, was found to depress the growth of rats when it comprised 60 percent of the unsaturated fatty acids of the diet. Levels of linoleic acid as low as ten percent of the diet produced satisfactory growth.

In a survey of current market samples of vitamin A products, neovitamin A was found to comprise about 20 percent of the total vitamin A activity. Since this isomer and other isomers are known to affect both the biological, chemical and physical assays for vitamin A, an investigation was made of their effects. Relative to all *trans*-vitamin A, the biological potency of neo-vitamin A was 70 percent and that of 6 *cis*- and 2,6-di-*cis*-vitamin A were about 20 percent. Vitamin A palmitate, alcohol and aldehyde have been found to have biological potencies almost identical to that of vitamin A acetate. Vitamin A acid was found to be virtually without biological activity.

Studies have continued on the chemical estimation of B vitamins. Proposed changes in the regulations permitting the use of folic acid in products advertised to the general public will undoubtedly result in its wider use. A simplified spectrophotometric procedure for folic acid in relatively high concentrations has been developed and attempts have been made to remove substances such as iron and liver concentrates which interfere with its colorimetric assay. The need for precise control of pH, time, and temperature in the colorimetric determination of pyridoxine has been demonstrated.

The isotope dilution procedure for vitamin B<sub>12</sub> using C<sub>60</sub> is being subjected to collaborative assay and compared with the microbiological assay. This laboratory is represented on the joint U.S.P.—N.F. Panel which is conducting this study. The isotope assay has the advantage of distinguishing between cyanocobalamin and the physiologically inactive pseudo forms which may be present in some vitamin B<sub>12</sub> preparations.

Submissions of hematological data on vitamin B<sub>12</sub> with intrinsic factor concentrate have been reviewed for compliance with the requirements of the Food and Drug Regulations. A procedure has been developed for assessing the magnitude of the hematological responses on a quantitative basis. This has aided greatly in determining the adequacy of borderline responses and has been found to be useful in making comparisons with the new procedures using labelled vitamin B<sub>12</sub>.

The *Escherichia coli* 113-3 method for the assay of vitamin B<sub>12</sub>, with the solution *meta*-bisulphite extraction of samples, has proved to be an effective method for the rapid "screening" of multi-vitamin products. The method is now used by the regional laboratories. Products found to be below labelled claim by this screening method are re-assayed by the official *L. leichmannii* procedure. The study concerning the inhibitory effect of thiamine and other compounds in the response of *E. coli* 113-3 to vitamin B<sub>12</sub> has been continued. It was found that the inhibitory effect of thiamine was directly related to the degree of aeration; thiamine apparently raised the requirement of vitamin B<sub>12</sub> in aerobic conditions. Cystine also proved to be inhibitory but the inhibition was partially reversed by thiamine or pantothenate. Cystine apparently interfered with either the synthesis or the utilization of pantothenate.

The metabolic interrelationship between vitamins as growth factors was studied with *L. leichmannii* 313, the test organism in the U.S.P. vitamin B<sub>12</sub> assay. Evidence of an antagonistic interrelationship between folic acid and pantothenic acid and between folic acid and vitamin B<sub>12</sub> was obtained. When suboptimal amounts of folic acid were present, high levels of either pantothenic acid or vitamin B<sub>12</sub> inhibited growth, suggesting that where these vitamins are essential for growth, the ratio of their concentrations may be more important in determining growth than their absolute amounts.

Ten papers have been published by members of this laboratory in the last year. In addition, a chapter for "Remington's Practice of Pharmacy" has been written on "Amino Acids and Proteins".

TABLE 1  
(Food and Drug Directorate)  
DRUGS EXAMINED  
From: April 1, 1955 to March 31, 1956

Laboratory	Domestic				Imports			
	Samples	Adulterated	Misbranded	Other Infractions	Shipments	Adulterated	Misbranded	Other Infractions
Halifax.....	152	.....	.....	100	285	.....	.....	270
Montreal.....	392	.....	.....	298	5,836	.....	.....	390
Ottawa.....	342	36	91	.....	1	.....	.....	.....
Toronto.....	730	70	274	1	454	37	339	57
Winnipeg.....	45	8	15	4	483	4	184	382
Vancouver.....	1,137	.....	.....	604	216	.....	.....	27
Totals.....	2,798	114	380	1,007	7,275	41	523	1,126



TABLE 2  
(Food and Drug Directorate)  
EXAMINATION OF DOMESTIC FOODS  
From: April 1, 1955 to March 31, 1956

	LABORATORIES						Adult- erated	Mis- branded	Other Infrac- tions	Totals
	Hali- fax	Mont- real	Ot- tawa	To- ronto	Win- nipeg	Van- couver				
Alimentary Pastes.....	3	.....	1	13	.....	.....	3	.....	3	17
Baking Powder, Leavening Agents or Chemicals.....	2	12	1	1	1	25	1	1	8	42
Bakery Products—Cakes, Pastry.	13	.....	15	124	20	9	8	20	11	181
Beverage & Beverage Concen- trates.....	134	178	16	29	195	74	20	13	94	626
Bread, Flour & Cereals.....	68	27	15	106	504	4	124	132	63	724
Breakfast Foods.....	.....	.....	.....	2	2	1	.....	.....	1	5
Confectionery.....	14	.....	3	62	13	15	12	.....	17	107
Dairy Products.....	255	5,664	73	179	197	135	118	7	802	6,503
Dessert Powders & Mixes.....	6	3	7	57	3	2	4	.....	3	78
Eggs & Egg Products.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1
Fish & Fish Products.....	105	20	7	39	75	53	2	.....	29	299
Food Colours & Flavours.....	49	11	1	31	1	110	12	3	62	203
Foods, Oriental.....	1	.....	.....	.....	.....	.....	.....	.....	1	1
Fruits, Fresh.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
Fruits, Canned.....	20	.....	.....	2,176	12	151	4	.....	10	2,359
Fruits, Dried.....	6	1	3	6	50	.....	5	19	2	66
Fruits, Glazed or Candied.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gelatin.....	.....	.....	.....	.....	.....	10	.....	.....	.....	10
Honey & Honey Products.....	3	.....	1	1	2	3	3	1	3	10
Jams & Jellies.....	4	163	21	377	21	119	78	.....	97	705
Juice & Syrups.....	41	.....	3	751	272	64	55	15	53	1,131
Lard & Shortening.....	7	.....	1	.....	1	30	1	.....	3	39
Liquors, Distilled & Fermented...	38	.....	.....	.....	3	10	.....	.....	9	51
Meat & Meat Products.....	219	197	78	222	195	370	89	8	140	1,281
Nuts.....	3	.....	1	69	2	1	4	.....	1	76
Oils.....	17	.....	14	2	1	.....	2	1	.....	34
Pickles.....	.....	.....	1	4	.....	.....	.....	.....	.....	5
Preservatives.....	1	.....	.....	3	.....	1	.....	.....	1	5
Salad Dressings, Sandwich Spreads & Other Condiments..	9	9	30	626	10	52	36	10	21	736
Soup & Soup Mixes.....	7	.....	3	58	.....	.....	1	.....	6	68
Spices.....	6	136	1	3	7	.....	1	1	27	153
Sugar & Substitutes.....	2	.....	.....	4	.....	.....	.....	.....	2	6
Sweeteners, Artificial.....	.....	.....	.....	2	.....	.....	1	2	.....	2
Syrups & Molasses.....	9	.....	1	1	14	11	7	2	11	36
Vegetables, Canned.....	8	.....	.....	462	29	42	20	.....	6	541
Vegetables, Dried.....	2	1	1	5	2	2	2	.....	2	13
Vegetables, Fresh.....	.....	.....	.....	.....	.....	1	.....	.....	1	1
Vegetables, Frozen.....	.....	.....	.....	10	.....	.....	.....	.....	.....	10
Vinegar.....	1	.....	.....	.....	39	.....	2	3	1	40
Water.....	10	.....	.....	.....	.....	173	.....	.....	.....	183
Miscellaneous.....	178	.....	5	14	9	28	7	3	136	234
Dairy Products (Dairy Division).	.....	.....	.....	498	.....	.....	363	.....	.....	498
Grand Totals.....	1,241	6,423	303	5,937	1,681	1,496	985	241	1,626	17,081

**TABLE 3**  
(Food and Drug Directorate)  
**EXAMINATION OF IMPORTED FOODS**  
From: April 1, 1955 to March 31, 1956

	LABORATORIES						Adult- erated	Mis- branded	Other Infrac- tions	Totals
	Hali- fax	Mont- real	Ot- tawa	To- ronto	Win- nipeg	Van- couver				
Alimentary Pastes.....					1					1
Baking Powder, Leavening Agents or Chemicals.....	5			1						6
Bakery Products—Cakes, Pastry.	57	1		55	32	10	5	12	17	155
Beverage & Beverage Concen- trates.....	89	15		40	78	34	4	13	17	256
Bread, Flour & Cereals.....	4			3	20	1	7	5	1	28
Breakfast Foods.....						3			3	3
Confectionery.....	266	71		185	206	165	31	18	149	893
Dairy Products.....	14	4		38	1	64	11	16	18	121
Dessert Powders & Mixes.....				13		1	2	3		14
Eggs & Egg Products.....						1			1	1
Fish & Fish Products.....	13	4		15	1	22	9		20	55
Food Colours & Flavours.....	1	2		27	14		14	15	1	44
Foods, Oriental.....	1								1	1
Fruits, Fresh.....				2			2			2
Fruits, Canned.....		4				3				7
Fruits, Dried.....	1,339	749		329	892	804	5	1	301	4,113
Fruits, Glazed or Candied.....	16			1		9		1		26
Gelatin.....				8		10	1			18
Honey & Honey Products.....				1		13		1	2	14
Jams & Jellies.....				3		36	1	2	6	39
Juice & Syrups.....	108	4		5	6	39	1	5	44	162
Lard & Shortening.....	2	5		2				1	2	9
Liquors, Distilled & Fermented..	1									1
Meat & Meat Products.....	104			24	6	327	3		38	461
Nuts.....	840	2,912		558	883	1,397	2		333	6,590
Oils.....	5	46		3	1	5		1	4	60
Pickles.....						1			1	1
Preservatives.....						1			1	1
Salad Dressings, Sandwich Spreads & Other Condiments..	3	1		12		5	1	2	4	21
Soups and Soup Mixes.....	5				1	3		1	1	9
Spices.....	208	662		21	122	143	1	5	40	1,156
Sugar and Substitutes.....	2			3						5
Sweeteners, Artificial.....				1				1		1
Syrups and Molasses.....	218	16		1		1		1	2	236
Vegetables, Canned.....				306		12		1	1	318
Vegetables, Dried.....	54	1		5	3	23		3	5	86
Vegetables, Fresh.....				1			1			1
Vinegar.....	36	38		2		6		1	2	82
Water.....										
Miscellaneous.....	69	22		8	13	4	9	5	44	116
Grand Totals.....	3,460	4,557		1,673	2,280	3,143	110	114	1,059	15,113



## NARCOTIC CONTROL DIVISION

### General

During the year Canadian requirements of narcotic supplies for medical use were met without difficulty. This goal was achieved by the close co-operation of licensed dealers in anticipating, with a reasonable degree of accuracy, changing medical and scientific trends in the use of narcotics. The importance of this work will be more readily understood when it is realized that Canada neither produces nor manufactures narcotics and, as a result, all her needs must be imported.

The effect of amended legislation under the Opium and Narcotic Drug Act which came into force during 1954 became more apparent in 1955. Severe penalties were provided for those convicted of trafficking in narcotics or being found in possession of drugs for the purpose of trafficking, and the Courts availed themselves of the opportunity of imposing lengthier sentences upon individuals found active in the illicit traffic. This is evidenced by the fact that, of the 365 sentences awarded under the Act during the calendar year 1955, 22 were in excess of the previous maximum of seven years. It is hoped that sharp warnings of this kind will eventually result in a marked decrease in trafficking.

Provisions under the regulations allowing pharmacists to release medication with a low narcotic content and intended for oral administration on the strength of a verbal order or prescription issued by a physician have been hailed by both physicians and pharmacists as an advance in narcotic administration.

There was no appreciable increase in the number of reported addicts in 1955. In spite of this, some difficulty has been experienced with illicit traffic in marihuana in one of the larger centres. It is felt, however, that this situation has been drastically suppressed by the arrest and conviction of the ringleaders.

Heroin is by far the outstanding drug in the illicit traffic and was the drug involved in 339 of the 365 convictions for narcotic offences. It should be emphasized that supplies of this kind found in the illicit traffic originate outside Canada and are smuggled into the country by devious methods.

### Control of the Domestic Trade

There were 162 firms licensed as narcotic dealers during the year. These companies, many having been associated with the legal distribution of narcotic drugs for a number of years, conducted all transactions on a very high level, strictly following approved distribution methods. Additionally, 141 licences to import narcotics were issued by the Division, and 47 export licences were granted.

Previously reported methods of recording purchases of narcotic drugs made by professional personnel and hospitals were followed in the Division. More than 35,000 individual purchase cards are maintained and well over 130,000 entries were included in these records during the year. Information so obtained was the basis for hundreds of enquiries being sent out to various firms, physicians, pharmacists and hospitals, all of which served to maintain an effective control over the use to which medication of this type is put in Canada.

An estimate of consumption of the various narcotic drugs in Canada during the period 1946-1955 and a statement showing the quantities imported in that decade appear in Tables 5 and 6 appended.



The inspectional staff of the Division, now consisting of seven pharmacists, visited 146 licensed dealers and audited all records and supplies in relation to narcotics. In addition, 658 hospitals and 1,933 retail pharmacies were inspected. During these inspections particular attention was given to the security measures provided for the safeguarding of narcotics as well as to ascertaining if narcotic regulations were being followed. Members of the inspectional staff were also called upon to make 122 enquiries of a special nature in the interests of narcotic control.

### **Supervision over Retail Pharmacies**

Many minor discrepancies in the manner of keeping records were discovered during these inspections of retail pharmacies. Usually when this situation was discovered, the matter was immediately corrected. In a few cases, however, stern warnings were given to pharmacists for apparent neglect in disregarding regulations.

As in the past, reports of narcotic sales were received at regular intervals from pharmacists across Canada. The schedule of processing these reports has been maintained at approximately 1,000 a month. The results obtained from this work, particularly with regard to detecting incipient cases of addiction and taking corrective measures to adjust matters, demonstrated conclusively that the program is a very important part of the system of control.

### **Liaison with the Professions**

As in previous years splendid co-operation was extended to the Division by all the provincial registrars of the medical, pharmaceutical and nursing colleges or associations. Members of graduating classes at various universities were given the opportunity of hearing a lecture outlining the need for narcotic control and the part they should play in efforts being made to prevent addiction developing.

Several opportunities occurred which permitted physicians to be informed of the addiction potentialities of some of the newer types of analgesics. Indeed, the routine use of morphine by physicians is rapidly declining and being replaced by newer analgesics known as synthetics. In some instances, it has been discovered that cases of addiction have occurred because the addiction properties of the drug prescribed were not known.

### **Convictions**

Supplies of illicit heroin continued to reach Canada in appreciable amounts. It is obvious a much higher standard of national control should be initiated in some countries if the desired degree of success is to be achieved in stamping out the problem of heroin addiction.

The availability of illicit supplies was reflected in the number of narcotic convictions registered. There were a total of 365 as against 340 the previous year. Of these convictions, 301 were for illicit possession, 42 for trafficking and 22 for possession for the purpose of trafficking.

As stated previously, 339 convictions involved heroin. Of the remainder, 11 cases involved morphine, eight marihuana, and one codeine. The synthetic drug, pethidine, was concerned in four cases and methadone in three.

The nationality of those convicted of narcotic offences in 1955 was: 3 Chinese; 1 German; 2 French; 1 Swiss; 358 British, Americans and Canadians.



Sentences handed down for narcotic offences were:

6 months to less than 2 years—231;

2 years to less than 5 years—88;

5 years to less than 7 years—24;

7 years and less than 14 years—22.

A summary of convictions in 1955 appears in Table 4 following.

### **International Co-operation**

All reports required by the United Nations Narcotic Commission as well as information on narcotic control were submitted. Moreover, 38 reports of significant seizures were forwarded to the United Nations secretariat for transmission to other countries.

The Division received several visitors associated with narcotic control in other countries, and invariably it was observed that the method of control adopted by Canada in this field left a very favourable impression upon those connected with similar work in other parts of the world.

TABLE 4

(Narcotic Control Division)

CONVICTIONS UNDER THE OPIUM AND NARCOTIC DRUG ACT

(During the Calendar Year 1955.)

PROVINCE	NATURE OF OFFENCE				DRUGS INVOLVED						
	Illegal possession	Traffic- ing	Possession for the purpose of trafficking	Total	Heroin	Mor- phine	Mari- huana	Deme- rol	Metha- done	Codeine	Total
Newfoundland.....											
Prince Edward Island.....											
Nova Scotia.....	3			3			3				3
New Brunswick.....											
Quebec.....	10	14	2	26	18	3	3	2			26
Ontario.....	77	3	5	85	77	2	2	1	2	1	85
Manitoba.....	11		1	12	10	1		1			12
Saskatchewan.....	3			3		3					3
Alberta.....	16	2		18	16	2					18
British Columbia.....	181	23	14	218	218						218
TOTALS.....	301	42	22	365	339	11	8	4	2	1	365

(Of the above, 1 male in Quebec, 1 female in Ontario and 4 males and 2 females in British Columbia had two convictions. Multiple related charges leading to concurrent sentences treated as one conviction.)



TABLE 5  
(Narcotic Control Division)  
ESTIMATED CONSUMPTION OF THE MAIN NARCOTICS  
(For the Period 1946-1955 Inclusive.)

Unit of Weight — Ounce, Pure Drug.

Year	Raw Opium	Medic- inal Opium and Preps.	Mor- phine	Heroin	Cocaine	Ethyl Mor- phine	Dilau- dide	Papav- erine	Codeine	Pethi- dine	Phol- Codeine	Metha- done and Preps.	Levor- phan	Nisentil
1946.....	3,422	4,797	3,492	1,058	1,552	1,110	22	455	36,191	2,045	.....	.....	.....	.....
1947.....	3,932	4,734	3,090	881	1,390	1,107	15	715	36,484	5,894	.....	.....	.....	.....
1948.....	2,090	6,026	3,074	995	1,407	1,032	22	1,416	39,672	5,642	.....	.....	.....	.....
1949.....	2,010	3,606	2,718	898	1,197	949	16	1,359	44,443	6,852	.....	385	.....	.....
1950.....	2,330	5,375	2,613	1,000	1,408	1,103	16	1,632	45,582	7,270	.....	397	.....	.....
1951.....	2,020	5,693	2,525	928	1,270	1,561	15	1,362	56,384	8,916	.....	454	.....	.....
1952.....	2,045	5,925	2,539	776	1,340	775	20	2,046	63,345	10,087	.....	388	29	.....
1953.....	762	5,036	2,692	828	1,412	1,582	21	1,691	53,199	10,512*	8	312*	34*	29
1954.....	1,819	5,574	2,470	992	1,171	593	3	2,608	64,187	11,828	200	383	13	111
1955.....	739	3,961	1,740	445	1,259	1,121	15	2,531	80,670	13,137	164	210	22	145

\* First use of Pure Drug figure as authorized on UNNC Annual Statistical forms for 1953.

TABLE 6  
(Narcotic Control Division)  
IMPORTS OF MAIN NARCOTICS  
(For Period 1946-1955 Inclusive.)

Unit of Weight — Ounce, Pure Drug.

Year	Raw Opium	Medic- inal Opium and Preps.	Mor- phine	Heroin	Cocaine	Ethyl Mor- phine	Dilau- dide	Papav- erine	Codeine	Pholco- deine	Pethi- dine	Levor- phanol	Alpha- prodine	Metha- done
1946.....	4,000	4,614	1,181	1,020	1,797	664	23	805	35,885	.....	5,539	.....	.....	.....
1947.....	3,360	6,458	1,046	906	2,169	745	18	961	36,915	.....	9,018	.....	.....	.....
1948.....	3,200	3,040	3,013	1,019	993	919	26	2,809	34,058	.....	5,175	.....	.....	892
1949.....	1,720	3,202	3,168	906	666	1,433	11	943	37,751	.....	4,106	.....	.....	1,068
1950.....	1,609	4,000	2,337	748	1,344	1,207	21	1,292	93,269	.....	5,480	.....	.....	92
1951.....	1,928	4,423	3,076	1,014	1,053	1,098	17	1,672	37,274	.....	9,189	.....	.....	73
1952.....	53	5,200	1,173	991	1,122	1,403	15	1,518	58,098	.....	12,343	.....	.....	329
1953.....	1,744	3,768	2,760	819	1,750	1,108	13	1,540	40,682	21	11,409*	28	93	208*
1954.....	208	5,280	2,134	832	1,704	1,389	7	2,996	99,273	627	20,884	20	56	324
1955.....	1,112	5,280	1,841	.....	1,044	853	15	3,063	84,537	201	15,191	20	231	337

\* Pure Drug figure utilized in 1953.



## HEALTH SERVICES DIRECTORATE

### Consultant Services

#### BLINDNESS CONTROL

The Division carried on its educational program for the preservation of vision by pamphlets, articles, radio scripts and motion pictures. Interest was continued in problems of the deaf. The bulk of the division's work consisted of: (1) the carrying out of the regulations of the Blind Persons' Act with regard to arranging for eye examinations in co-operation with the provinces, reviewing the eye reports and issuing blindness certificates to the provincial blindness allowance authorities; (2) administering the restoration of vision treatment scheme, in co-operation with the provinces for suitable recipients of blindness allowance; (3) advising the National Health Grants administration, especially in connection with projects for glaucoma clinics and eye research.

#### Treatment Scheme

The treatment scheme designed to restore vision to suitable blind pensioners was initiated by the Division in 1948 as an experiment. It was made permanent in 1952, and nine provinces agreed to participate. The treatment is authorized by the Division and administered provincially with the federal government re-imbursing each province for 75 percent of the cost. The scheme continues to expand. In the year ending March 31, 1956, 83 cases were treated—mostly by cataract extraction. 62 were successful. In the previous year 53 were treated with 44 successes. Since 1948 the results are as follows:

<i>Province</i>	<i>Successful</i>	<i>Unsuccessful</i>	<i>Total</i>
Nova Scotia	10	9	19
New Brunswick	46	12	58
Quebec	109	42	151
Ontario	38	9	47
Newfoundland	1	1	2
Saskatchewan	1	—	1
Manitoba	5	2	7
Total	210	75	285

#### Glaucoma

Glaucoma continues to cause more blindness in Canada than any other eye disease. The four glaucoma clinics for needy persons already in operation were augmented by clinics at Saint John, N.B., London, Ont., and Vancouver, B.C. These clinics are conducted as projects under the General Public Health Grant. Other glaucoma clinics are in the planning stage.

#### Legislation

The age limit for eligibility for blindness allowance was lowered from 21 to 18 years by an amendment to the Blind Persons' Act. This has resulted in the addition of several hundred blind in Canada to the blindness allowance rolls. Of the 21,010 registered blind in Canada some 8,500 are receiving a blindness allowance. On reaching age 70 the blindness allowance is stopped and an old age security pension is automatically substituted.

The Division prepared a new pamphlet concerning visual problems of teen-agers, for publication by the Information Services Division.



## Eye Research

The Division continued its interest in eye research by means of projects under the National Health Program. By this means projects are under way at the Banting Institute and Hospital for Sick Children, Toronto, concerning virus eye diseases, uveitis and panophthalmitis. A research eye bank has been started at Toronto to investigate preservation of corneae for transplantation purposes. Research into glaucoma continues at Toronto, while at the University of Ottawa a research project is under way concerning corneal transplantation and the action of drugs on the nerves and muscles of the eyes.

## CHILD AND MATERNAL HEALTH

The Division has continued to concern itself with the specific health needs of mothers and children, a group composed of almost a million new mothers and babies each year and a child population of 4,500,000 under 15 years of age. Particular emphasis has been placed as in former years on maternal and infant health services. The Division functions in an advisory capacity and assists in a number of ways in the promotion of optimum health for the mothers and children of Canada, including: (1) assistance and advice are made available to provincial health departments in the assessment of present facilities and services and in planning for their extension; (2) assistance is given on request to the National Health Grants Administration in the review and assessment of health grant projects for services to mothers and children; (3) educational materials for both the general public and professional individuals and groups and (4) research conducted and stimulated on health problems peculiar to mothers and children.

## Health Grants

Improvements and extensions of maternal and child health services on the provincial and local level have been stimulated by the funds of the Child and Maternal Health Grant. The Division has continued to be consulted frequently by the National Health Grants Administration regarding the utilization of these funds. During the year another province made an arrangement to obtain pediatric consultant services in child health so that almost every province now has some administrative arrangement for the coordination and extension of maternal and child health services, including six divisions of maternal and child health under full-time medical direction. Utilization of funds continued to emphasize the improvement of hospital maternity and newborn care through provision of equipment and the training of medical and nursing personnel. Grant support assisted in the development of two courses for nurses in newborn and premature care.

Interesting and valuable research was carried on, assisted by National Health Grant funds. A high proportion of the studies under way was in the area of maternal and newborn care such as the causes of abortion, nitrogen balance in pregnancy, newborn hematology, inheritance in hare lip and cleft palate.

## Consultation with Provinces

Every province was visited by the Chief of the Division during the year. Discussions took place with provincial health authorities as well as with physicians and hospital personnel concerned with these problems. Advantage was taken of every opportunity to visit projects receiving grant assistance and to discuss the terms of reference of the Child and Maternal Health and Crippled Children Grant. The nursing consultant also visited nine provinces during the year to familiarize herself with nursing service and nursing education in relation to maternal and child health. Her initial contacts in each province were with the directors of public health nursing and maternal and child



health. Visits were made to university schools of nursing where they existed and to provincial nursing associations.

### **Educational Materials**

The development of educational materials in cooperation with the Information Services Division has continued. Emphasis has been placed during the year on materials for use in prenatal education programs. The major production has been a manual for nurses "Education for Expectant Parents". This, along with two pamphlets for mothers on prenatal care in general called "Before Baby's Born", and prenatal nutrition called "What to Eat Before Baby's Born", will be available soon.

Two new filmstrips have been produced: "Before Baby's Birthday" dealing with prenatal care and "Caring for Baby" dealing with infant care.

A new policy has been established whereby the free distribution of the "Canadian Mother and Child" has been reduced by 25 percent. Other materials, such as the manual "Care of the Premature Infant", have been in constant demand.

### **Other Activities**

The year was marked by a most significant event. The first Maternal and Child Health Conference of federal and provincial maternal and child health workers was held in Ottawa at the invitation of the department. Seven provincial health departments were represented, including five of the six provinces which now have divisions of maternal and child health under full-time medical direction. Outlines of provincial programs emphasized an active interest in prenatal education and problems of newborn and premature care in hospitals. The utilization of National Health Grant funds to improve and extend maternal and child health and crippled children's programs and for research was discussed. It was clear that there were many areas of common interest and it appeared that further meetings would make a distinct contribution to a more coordinated program of health care for these special groups.

The nursing consultant attended a three-week institute on "Preparation for Child-bearing" given by the Maternity Centre Association in New York City. On the invitation of a provincial health department the nursing consultant led a 3½ day institute for public health and hospital nurses on "Maternal and Infant Care".

The chief of the Division participated in a panel discussion on newborn care at the joint British Medical and Canadian Medical Association meeting.

### **Indices of Progress**

Reductions in maternal and infant mortality rates are widely recognized as valuable reflections of general progress in maternal and child care. The prevention of needless maternal and infant deaths is a primary objective in all maternal and child health programs but should not be the sole objective.

**Maternal Deaths**—In 1954 there were 312 deaths of mothers in Canada. This represents a rate of 0.7 deaths per 1,000 live births—the lowest national rate which has ever been achieved. In 1944 there were 814 deaths in nine provinces and a rate of 2.8 deaths per 1,000 live births.

There was considerable variation in rates among provinces in 1954, the highest rate being 1.6 and the lowest 0.3.



## Major causes of maternal deaths, 1954:—

	<i>Number</i>	<i>Percent</i>
Toxemia .....	83	27%
Hemorrhage .....	75	24%
Infection .....	61	19%
Disproportion and prolonged labour.....	35	11%
Other .....	58	19%
Total.....	<u>312</u>	<u>100%</u>

Obviously good maternity care is not being received by all mothers who need it. Many of these maternal deaths are preventable. Adequate prenatal care with facilities for laboratory tests would discover cases of toxemia of pregnancy in the early stages when treatment can most effectively prevent a serious outcome. Better hospital facilities with transfusion services would contribute greatly to a reduction in deaths from complications such as hemorrhage at delivery.

Although there are no accurate statistics on maternal morbidity, the association between maternal morbidity and complications in the newborn infant is well recognized. Continued improvement in service to mothers will be reflected in a reduction in stillbirths and neonatal deaths as well as maternal deaths. Two steps are necessary. One is to improve facilities for maternity care, especially in rural areas, and the other is to ensure that the mothers requiring care avail themselves of it.

**Infant Deaths**—In 1954 there were 435,142 live births in Canada, a birth rate of 28.2 per 1,000 population. There were 13,841 infants who died in their first year, an infant mortality rate of 32 per 1,000 live birth. The rate 10 years ago was 56. Canada has obviously shared in the worldwide improvement in infant mortality. We have cause for concern, however, since many other countries with no higher standards of living save more infant lives. In 1954 eight countries had rates under 30, and 11 under 32.

There was considerable variation in infant mortality rates among the provinces—the highest rate being 41 and the lowest 26.

As deaths in the first year decrease, deaths in the first month of life or neonatal deaths make up a larger proportion of the total. In 1954, 8,384 deaths or 60 percent occurred in the first month of life.

If to 8,384 newborn deaths are added 7,213 stillbirths, the total of 15,597 Canadian infant lives lost before one month of age is formidable. The size of the problem is further illustrated by the fact that in 1954 this number of deaths was exceeded only by deaths at all ages from malignant disease and arteriosclerotic heart disease.

## Major causes of infant deaths, 1954:—

	<i>Number</i>	<i>Percent</i>
Lower respiratory infections.....	2,310	17
Congenital malformations .....	2,137	15
Immaturity .....	2,062	15
(as a contributory cause in 2494)		
Asphyxia and atelectasis .....	1,507	11
Birth injury.....	1,386	10
Gastro-intestinal infections.....	691	5
Hemorrhagic disease and erythroblastosis.....	501	4
Ill-defined diseases.....	969	7
Other .....	2,278	16
Total.....	<u>13,841</u>	<u>100</u>



Respiratory infections remain the leading cause of death in infancy, while gastrointestinal infections contribute significantly to the total. It is seen too that immaturity or prematurity is an important cause of death. Of all infant deaths one-third occur in premature infants under one month of age. This further emphasizes the importance of the care of newborn infants in hospital since 85 percent of infants are now born there. It is clear that infant and maternal mortality are urgent health problems which require the cooperative efforts of physicians, hospital services and public health workers for their solution.

## DENTAL HEALTH

One of the tasks undertaken by the Dental Health Division soon after its inception in 1946, and still continuing, was to obtain a measure of the prevalence of tooth decay, dento-facial abnormalities, and periodontal disease. It has been found that the school child who does not have tooth decay and the adults who do not have both tooth decay and disease of the periodontal tissues, with malocclusion as well, are so rare as to command both professional and lay interest whenever they are encountered.

Oral disease and partial disability is the rule rather than the exception. Familiarity with it from earliest childhood, along with the fact that *per se* its contribution to mortality statistics is negligible, has delayed its recognition as a matter of public health importance. However, within recent years studies in dental economics and epidemiology, some of them by this division, have revealed something of the magnitude of the problem and stimulated the thinking of public health people concerning it. A recent survey by the Canadian Dental Association showed that the annual cost of treating oral disease is somewhere in excess of \$70,000,000. This expenditure and the efforts of Canada's 5,000 dentists, was sufficient to meet something less than one-quarter of the total need for oral health care.

The futility of endeavouring to deal with such a burden of disease by traditional dental treatment measures has become clear. Attention has been turned to prevention as offering the only solution. This has given an impetus to the use of known preventive measures, to their improvement and to the quest for new ones, which in turn is in the course of having a profound effect on the thinking, work and training of the dental profession. Attention has been directed as never before to the systematic dental care of young children. The National Health Grants arrived at the right time to further the development of this trend.

### Health Grants

Oral health programs aided by federal health grants are now in operation in all provinces. The General Public Health Grant is their main source of health grant aid. Six provinces have set up dental divisions, each headed by a dentist whose training in public health was obtained with the assistance of a bursary provided from the Professional Training Grant. These divisions collaborate closely with the Dental Health Division of this Department and with the dental profession on technical matters relating to the dental care of young children, and in setting up grant-aid health education and systematic treatment programs for pre-school and elementary school children. In this way the federal health grants are laying the foundation for a systematic attack on oral diseases and growth abnormalities, beginning where they should begin, in the child.

The Crippled Children's Grant provides aid for two important projects aimed at the prevention and early interception of dento-facial abnormalities. One is a research project at Burlington, Ont., in which a study is being made of environmental and genetic factors which appear to have a bearing on the question. The other is a preventive orthodontic clinic in Toronto, which uses and develops methods for the interception of malocclusion in very young children.



Although the National Health Grants have been used chiefly to aid programs aimed at prevention and early systematic treatment for very young children, considerable help has been given to improve oral health facilities for adults in sanatoria and mental hospitals.

## Research

During this year the dental caries data derived from the 1955 clinical examination of about 5,000 children involved in the study of the dental effects of water fluoridation in the test city of Brantford and the two control cities of Sarnia and Stratford were analyzed and a report published. The Research and Statistics Division assists with this work. The analysis of the data shows that the children born in Brantford since the beginning of fluoridation (1945) have about the same caries prevalence as those of the corresponding age groups in Stratford, where the water supply has contained fluoride in excess of one part per million for the past 39 years. The caries prevalence for these age groups in Sarnia, where the water is fluoride-free, is three times as high. No ill-effects of either a medical or a dental nature have been observed in either Brantford or Stratford.

The five reports issued by this Department on the Brantford-Sarnia-Stratford study and published in the *Journal of the Canadian Dental Association* have been widely quoted in scientific journals in many parts of the world. Following the publication of each report so many requests have been received from universities and health officials, in Canada and abroad, for a description of our study methods that this Division and the Research and Statistics Division have found it necessary to prepare and make available for distribution a publication entitled "A Suggested Methodology for Fluoridation Surveys in Canada." The demand for this monograph is increasing.

In addition to the water fluoridation study, the Division, again with help from the Research and Statistics Division and also with help from the Food and Drug Directorate, is conducting two other studies in the field of prevention. One of them involves the topical use of a stannous fluoride solution for the prevention of tooth decay. This one, which was reported at the 1955 meeting of the Canadian Public Health Association with the report appearing in the October, 1955, issue of the *Canadian Journal of Public Health*, has produced evidence to suggest that stannous fluoride, although requiring further investigation, may be a highly valuable agent with which to combat tooth decay. The other study is aimed at simplifying the technic for using sodium fluoride.

## Education and Information Services

Nowhere across the broad field of public health does prevention depend so much upon what people can be motivated to do and to continue to do for themselves as in the field of oral health. The health of oral tissues, hard and soft, depends upon the eating habits which people can be taught to accept and practise, with special reference to sweet foods. It depends also upon their being taught to desire and practise oral cleanliness. Selecting food wisely and cleansing the mouth are the initial and most important aspects of an oral health program. Generally speaking, only the individual himself can do these things. Without them, the beneficial effects of any preventive and treatment services provided for him by others are rendered largely ineffective or completely undermined. The first step in initiating an oral health program should be to teach people to do for themselves those preventive measures which they alone can perform. Only by the adoption of such a policy can the investment of public funds in treatment programs be protected.

Therefore, this Division, with the assistance of the Information Services Division, has directed its attention and efforts to the production of attractive folders, posters, films



and filmstrips designed chiefly for use in elementary schools. These materials are planned in co-operation with the provincial departments of health. They are in heavy demand. Requests to purchase them frequently come from health agencies of other countries.

A new film, the first to deal with the subject in Canada, on the prevention of malocclusion is now in the course of production.

### Other Activities

The research work of this Division on water fluoridation and on the topical use of fluorides has given rise to many requests to address dental and public health organizations and also such lay organizations as city councils, boards of education, home and school and nurse groups. The major organizations addressed during the year were the Canadian Dental Association, the Maritime Dental Association and the Canadian Public Health Association. Scientific articles prepared by the Division have been published in the Journal of the Canadian Dental Association, the Canadian Journal of Public Health and the Canadian Services Medical Journal. A paper was also prepared and presented as part of a civil defence course at the Civil Defence College, Arnprior. This will be published in the Journal of the Canadian Dental Association.

Members of the Division have attended scientific meetings in both Canada and the United States with a view to keeping abreast of developments related to the research work of the Division. The head of the Division was elected to membership in the International Association for Dental Research, in recognition of the value of articles published on studies of the dental effects of water fluoridation.

During the year the Division has assisted in the work of the following divisions, and in turn has received help and advice from most of them: Health Grants Administration, Research and Statistics, Food and Drug Directorate, Child and Maternal Health, Occupational Health and Information Services.

Close liaison is maintained with the Canadian Dental Association and more particularly with those of its official committees whose terms of reference have a bearing on public health matters. Liaison has been established with the Associate Committee on Dental Research of the National Research Council, and the head of the Division has been appointed to membership on that committee.

### HOSPITAL DESIGN

This Division is a consulting service to provincial health departments and to those concerned with the planning and operation of hospitals. It co-operates with the provinces in their efforts to promote sound planning for health institutions of all types.

Plans of every hospital requesting assistance under the Hospital Construction Grant in the National Health Program are studied to see that they conform to minimum standards of hospital construction as prepared by this Division. These plans are also studied to determine the amount of federal assistance payable under the terms of the grant.

### Consultations

The provinces, and also a number of architectural firms, forward drawings to this Division during their preliminary stage for criticism and consultation prior to submitting a formal request for federal assistance. The advantages of this procedure are that the plans can be easily altered at an early stage in their development. This Division produced alternate plans which have been adopted wholly or in part, for many hospital projects during the past year.



Because of the limited number of personnel, it is not possible for this Division to undertake at this time research planning projects which would provide information for those concerned with the planning and operation of hospitals and allied construction.

### **Hospital Construction Grant**

Since the inception of the Hospital Construction Grant in 1948 more than \$79,500,000 have been allocated toward the construction of space for more than 60,500 patient beds of all types, 7,700 bassinets and 10,300 nurses' beds. Grants have also been approved for community health facilities (which include such areas in hospitals as out-patient departments, radiology, laboratories, emergency, pharmacies, dispensaries and remedial therapy) and for training facilities for health and hospital personnel. The problem of approval becomes more complicated yearly as hospitals often return three or four times for additional grants, as well as submitting numerous amendments to those projects already approved. It is necessary to review the complete developments to ensure that a duplication of assistance does not occur or that a hospital receives all it is entitled to under the terms of the order-in-council.

The problem of obsolete facilities in hospitals is being studied. It becomes of increasing importance now that the acute shortage of active treatment beds, which existed in 1948, has been met, although there will be a continuing demand for new beds due to increases in population and the re-location of hospitals to cope with a shifting population. There is still a shortage of beds for the mentally and the chronically ill.

Conferences on hospital planning and problems pertaining to the Hospital Construction Grant were held with provincial health authorities of Nova Scotia, Ontario, Quebec, Manitoba, Saskatchewan, Alberta and British Columbia.

### **Other Activities**

During the past year the Chief of the Division gave papers on various subjects relating to hospital planning to the Manitoba Hospital Association, the Western Conference of Hospital Administrators, and the B.C. Hospital Association. He also lectured for a day to the students attending the course for hospital administrators at the University of Toronto. He has continued to act in a consulting capacity for hospital planning of the armed forces and is a member of the C.F.M.C. Sub-Committee on Hospital Planning. He also continues to act as chairman of the C.S.A. Committee on Safety Code for Hospital Hazards.

## **MENTAL HEALTH**

During the fiscal year the Mental Health Division continued its program of assisting the provinces in the expansion and improvement of mental health services in Canada. Allocations from the Mental Health Grant were at a satisfactory level—expansion of existing services was supported and new services were inaugurated. A continuous evaluation of the requirements for mental health services in Canada was maintained and the Mental Health Division, in co-operation with the provincial mental health services and university departments of psychiatry, attempted to promote those programs most likely to lead to improvement in treatment services provided for the care of the mentally ill.

### **Mental Health Grant**

Total expenditures exceeded \$5,600,000, which was slightly less than the total expended during 1954-55. The decrease was a reflection of the general application of new principles with regard to meeting mental health needs. This change called for new planning with a resultant lag in organization of facilities and thus in expenditures—a lag which should not be evident in 1956-57. As a result of these new principles the outlay for provincial mental health divisions increased from \$173,000 to \$180,000 while ex-



penditures for mental hospital services decreased from \$3,372,000 to \$2,840,000; community mental health clinics received \$709,000 as compared with \$697,000 in the previous year; psychiatric services in general hospitals accounted for an expenditure of \$719,500 as against \$607,000; support for training programs decreased from \$231,000 to \$209,000; bursaries were about the same—\$427,000 to \$434,000; research expenditures rose from \$522,000 to \$547,000.

These figures reflect the fact that the original need for establishing training centres has, to a great extent, been met and expenditures on this item will probably remain stationary or will decrease in future years. The serious need for mental hospital equipment and personnel has also been ameliorated—new hospitals have been built and old ones remodelled and expanded. Thus there is a decrease of 15 per cent in expenditures for mental hospital services. On the other hand, the increasing belief in the value of the psychiatric unit in the general hospital has led to an increase in expenditure of more than 15 per cent for these services in one year. The need for trained personnel and further knowledge of the etiology and treatment of mental illness indicates that expenditure on bursaries and research should be continued at least at the present level for some years.

### Consultant Services

One of the important aspects of the Division's work has been the provision of consultant services to the provinces, to other divisions of National Health and Welfare and to other federal government departments. Such consultant services are regularly provided to Medical Rehabilitation and Disability Advisory Services, Immigration Medical Services, Information Services Division, Civil Defence, Narcotic Control Division, Hospital Design Division, Indian Health Services and the Dominion Bureau of Statistics. In addition, the Mental Health Division has made personnel available to provinces and municipalities for discussions on research design, employment policies, training of personnel and other related topics. That provision of such aid is welcome it attested by the steadily rising number of requests forwarded to the Division. Important contacts with mental health personnel were maintained by attendance of the division Chief at a preliminary meeting which led to the establishment of a Mental Health Section of the American Public Health Association. He also acted as chairman of the Public Health Committee of the American Psychiatric Association.

### Public Education

The rising public interest in problems of mental health has presented a challenge to the Division to make available the kind and amount of educational material that will support this growing interest. Accordingly, the Division issues pamphlets, motion pictures, filmstrips, as well as *Canada's Mental Health*—a newsletter for professional personnel. Thus, each year, demands for material in new fields must be met as well as provision for a continuing supply of current publications.

Pamphlets produced in 1955-56 included "Opportunities for Registered Nurses in the Mental Health Field", "Opportunities for Social Workers in the Mental Health Field", "Mental Retardation", "Parent Education", and "Sleeping Habits". Filmstrips prepared were "Fear", "Feeding Habits", and "How Should I Tell My Young Child About Sex". Films produced were—the English version of "From Ten to Twelve" in the Ages and Stages series; and a French version of "To Serve the Mind". The two pamphlets on "Opportunities" are a clear indication of the division's recognition of personnel shortage in the mental health field.

In addition to the above standard materials a Fact Sheet, dealing with mental illness in Canada, was prepared for the information of professional personnel and four posters on mental health were printed for public use.



## Advisory Committee on Mental Health

The Advisory Committee on Mental Health did not hold its annual meeting this year. However, subcommittee reports are as follows:

**Research**—The Research Subcommittee met and recommended 48 research projects (an increase of five over the previous year) in an amount of \$547,000, a small increase over the previous year.

**Public Education**—This Subcommittee met on two occasions and gave careful thought to the adequacy of promotional material presently available. The assistance of this committee in the development of the division's public education program is most valuable.

**Training**—The Subcommittee on Training met July 7 and 8, 1955, to consider current training of psychiatric nurses and to make such recommendations as appeared advisable for the furtherance and improvement of such programs. Agreement was reached on several items such as definitions, titles and duties of psychiatric nurses. Approval in principle was given to a combined psychiatric and general nursing course and a core committee was appointed to study the requirements which would be necessary to establish such a program.

Although the Subcommittee was not asked specifically to deal with the study of personnel shortages, undertaken by the Mental Health Division on request of the Advisory Committee, nevertheless the study properly is part of the Subcommittee's area of interest and, therefore, is reported here. The Mental Health Division collected data to satisfy the previous year's request for information on needs for professional personnel in Canada. A tentative report on such needs was turned out and a study of attrition was completed in rough form by the end of the fiscal year. This latter report will be available in final form in the summer of 1956. Such studies may have a very profound influence on the training and bursary programs in the future and may indeed be of great help to the universities and other training centres as they plan their services in the coming years.

## NUTRITION

The program of this Division is designed to determine the extent of nutrition problems in Canada and to maintain and improve the health of the population by encouraging sound nutrition practices. Towards these ends, a variety of technical services are provided to provincial and federal agencies.

To promote and facilitate an exchange of up-to-date nutrition information, a Nutrition Conference was sponsored in Ottawa in July, 1955. This second conference (the first was held in 1945) was attended by approximately 200 professional people coming from every province except Newfoundland.

A simplified system for collecting and submitting blood samples resulted in a notable increase in the work of the clinical nutrition laboratory. In the experimental kitchen school lunch recipes were tested and standardized at the request of a provincial health department.

Assistance with nutrition institutes in two western provinces marked the beginning of a new field of activity.

## Research and Surveys

Further tabulations of data obtained in the weight-height survey were received from the Dominion Bureau of Statistics. Several papers on various aspects of the subject were presented to professional groups, and articles were prepared for scientific journals.



A wall chart of the weight-height tables was produced and distributed to provincial health departments.

A study of the relationship between bone-meal enriched flour and haemoglobin levels, in progress for six years, was concluded, and a report is being prepared. Also concluded was a study of the storage life of a variety of common foods. This study, which has been carried on for four years, was designed to provide information of value in disaster planning.

Work was started on a revision of the weighted nutrient conversion factors used in calculating the nutritional value of the foods entering civilian consumption in Canada. A revision of diet record forms used for nutrition surveys was also undertaken.

In connection with the study of Leber's Optic Atrophy, which has been carried on by the Division for the past six years, a method of scoring stress factors that might have a causal effect was developed and put into practice.

### Laboratory Services

A new method of collecting blood samples for shipment was developed by the laboratory. As a result, the service to physicians and hospitals, whereby analyses of certain nutrient factors in blood and urine samples are performed free of charge, was greatly expanded during the year. Officers of Indian Health Services, as well as several provincial laboratories and private groups, took advantage of this service. More than 2,000 tests were completed during the year.

During the clinical examination of a group of 432 students in New Brunswick, blood samples were obtained and analysed for vitamins and other body constituents.

### Consultant Services

*Other Divisions*—A study of the breakfast habits of Ottawa civil servants was undertaken as a joint project by the Civil Service Health Division and the Nutrition Division. More than 4,000 civil servants returned questionnaires, and follow-up programs were instituted to correct the faulty eating habits disclosed by the survey.

Civil servants with possible nutritional problems continue to be referred to the Nutrition Division for examination and advice. To extend the value of this service, a nutritionist has been assisting the nursing counsellors with the nutritional advice they give to many civil servants in addition to those actually referred to the clinic.

Comprehensive reports on the feeding services in hospitals and nursing stations visited during 1954--55 were prepared and submitted to Indian Health Services. The staff requirements and duties for food service departments in Indian hospitals were outlined, and equipment lists for food service in nursing stations were prepared. Advice was given on kitchen plans for a 120-bed hospital in Whitehorse.

Some quantity recipes for 20-50-100 serving recipes, for use in Indian hospitals, were tested in the experimental kitchen.

Assistance was given to Indian Health Services in planning and judging a nutrition poster contest for children in Indian schools and hospitals.

Nutritionists assisted in planning for and carrying out a welfare emergency feeding course at the Canadian Civil Defence College, Arnprior. The Division is also represented on a committee studying emergency rations and on one on food technology.

Several divisions requested collaboration with pamphlets, filmstrips and other educational materials in which nutrition information was included.

*Other Departments*—Advice was given on kitchen plans and equipment requirements for Indian residential schools being constructed in Le Pas and Dauphin. Informa-



tion was also provided concerning equipment for other schools. The keeping quality and nutrient value of the specially-prepared vitaminized biscuits distributed to Indian school children were studied. Work was also done on simplification of current relief rations supplied in northern areas of Canada.

Membership on nutrition panels and interdepartmental committees occupies some of the time of the chief of the division, who also served on an FAO Committee on Protein Requirement in Rome.

*Provinces*—Nutritionists constitute a relatively small professional group. Many others—doctors, nurses, social workers, teachers—include nutrition teaching with their other activities. Provincial nutritionists have frequently requested this Division to provide an opportunity for all these groups to meet together to obtain up-to-date information on nutrition and on educational methods most suitable for nutrition teaching. For this purpose a Nutrition Conference was sponsored by the Division. Held in Ottawa in July, 1955, it was attended by approximately 200 professional people interested in nutrition. All of the groups mentioned were represented. The Conference was a stimulating experience for all who attended, and it has been suggested that regional conferences of a similar type would serve an extremely useful purpose.

At the request of the New Brunswick Department of Health, a set of school lunch recipes submitted by the province is being tested and standardized.

Several provinces have requested assistance in putting on courses for the cooks in small institutions. Plans have been completed for three such courses to be held during the summer and autumn of 1956. During the year provincial nutritionists requested and received assistance with a variety of specific problems. Considerable time was devoted to replying to the many requests for nutrition information that were received from professional and lay people.

## Education and Information

A nutritionist assisted in planning for and participated in institutes for nurses that were held in Alberta and Manitoba. Nutrition education received particular emphasis. A nutrition refresher course for home economics teachers in New Brunswick is being planned for July, 1956.

A nutrition photograph contest was held for the fourth successive year. Sixty-one entries were received.

Publications of proved usefulness were reprinted for use in provincial nutrition programs.

## Advisory Committee

The 1955 meetings of the Canadian Council on Nutrition, an advisory committee to the Minister of National Health and Welfare, and of the Dominion-Provincial Nutrition Committee, a committee of the Council, were held in conjunction with the Nutrition Conference.

## Environmental Health & Special Projects

### MEDICAL REHABILITATION AND DISABILITY ADVISORY SERVICE

The Medical Rehabilitation and Disability Advisory Service, established last year, continued to build up its services during 1955-56. There was a considerable increase in the calls made on both areas of its functions. In rehabilitation and in disability programs, there was a general expansion of provincial programs.



## Rehabilitation

The staff of the service act as consultants in matters pertaining to medical rehabilitation. In this connection, the service co-operates with the National Health Grants Administration by providing technical appraisals of all projects submitted under the Medical Rehabilitation Grant. In some instances, projects submitted under other grants, which pertain to rehabilitation in specific fields, are also appraised by the service. Close liaison is maintained with other consultants where mutual interests are involved.

**Medical Rehabilitation Grant**—There was some increase in utilization of the Medical Rehabilitation Grant during the year. Because of the policy of relating individual projects to provincial rehabilitation plans, caution has been exercised in the extent to which individual submissions have been sent in. Some provinces, however, have been using almost fully the funds allocated to them; in other provinces, progress has been less marked. The manner in which the grant funds have been used differs from province to province. A substantial portion of the grant is being used for the training of rehabilitation personnel. The lack of qualified rehabilitation staff is, in many instances, the greatest handicap to the extension and expansion of rehabilitation services. In addition to providing the funds for the training of such personnel as physiatrists, physiotherapists, occupational therapists, speech therapists and medical social workers, grant funds have also been made available to assist in the establishment of two schools of physiotherapy and occupational therapy.

In several provinces grant funds have been made available for the employment of medical rehabilitation personnel. In addition, funds have been provided for the extension of medical rehabilitation services. A pilot project to provide rehabilitation services in chronic hospitals was also financed out of grant funds.

Medical rehabilitation equipment has been purchased for rehabilitation centres and for rehabilitation departments in hospitals.

**Liaison and Co-operation**—The Service maintains liaison with other departments of the federal government, in addition to other divisions within the Department. Constant consultations are held with the office of the National Co-ordinator for Rehabilitation of the Department of Labour. The service co-operates with the Vocational Training Branch of the Department of Labour, with the Special Placements Branch of the National Employment Service and with the Department of Veterans Affairs in matters of mutual interest.

The Service continued actively to participate in the work of the National Advisory Committee on the rehabilitation of disabled persons. Representatives of the Service attended meetings of the executive and of the Committee held in Winnipeg and Quebec respectively during the year.

Provincial governments have received technical advice from the service. At the request of the Government of British Columbia, a comprehensive study of medical rehabilitation was carried out in that province. Further requests for similar studies were received before the end of the year. A number of requests for technical advice from community planning groups and voluntary agencies were also filled.

## Disabled Persons Programs

The Service continued to co-operate with the Director of Disabled Persons Allowances in the medical areas of the disabled persons programs. Agreements were entered into with eight provincial governments for the sharing of costs of special medical examinations when such examinations were authorized by federal and provincial medical representatives charged with advising provincial authorities concerning disability factors.



At the end of the first year's operation of the disability programs, a meeting of federal medical representatives was convened in Ottawa, to which provincial medical review board personnel were invited. As a result of the proceedings of this meeting, certain modifications in the interpretation of the definition of permanently and totally disabled were suggested. A new section was added to the Disability Evaluation Manual on the subject of social factors in disability evaluation.

## OCCUPATIONAL HEALTH DIVISION

The prime objective of this Division is the promotion of good health practices among industrial and other occupational groups in Canada. It functions in an advisory and consultant capacity on occupational health matters. On request, both advice and assistance are provided to other federal government departments, provincial departments, several Crown companies, the armed forces, commercial and industrial organizations and other interested groups and individuals.

### Laboratory Services

Many occupational health problems referred to the Division require scientific research and investigation in laboratory, field, factory or mine. The laboratory, with a well-trained staff of experts in various specialties and using modern equipment, is well fitted to undertake such work and operates in close cooperation with the clinical staff.

Occupational health problems included the analysis and control of dusts and gaseous contaminants as well as other problems of the working environment.

### Research in Dust Analysis

1. *Research on microchemical techniques for the identification of submicron particulates in contaminated air by optical and electron microscopy* — At the request of the Technical Advisory Board on Air Pollution of the International Joint Commission a study to evaluate the submicron air pollutants in the Windsor-Detroit areas was instigated. The latest and most efficient techniques were employed in this study, and work is continuing with a view to extending the range of identification of particle size.

2. *X-ray Diffraction Studies* — X-ray diffraction analysis of atmospheres of several Ontario cities revealed a striking similarity in the concentrations of calcite and calcium sulphate (gypsum). From this work it was postulated that a chemical reaction takes place between air-borne calcite and sulphur compounds which occur in urban atmospheres. Experimental tests were made and are continuing to determine the validity of this hypothesis

Through the use of diffraction equipment, special industrial dusts, suspected of being toxic and not estimable by other techniques, were analyzed. These studies are continuing.

3. *Studies of Sulphur Dioxide* — Late in 1955 an air sampling station, operated largely with automatic equipment, was put into operation in Ottawa to determine the sulphur dioxide content of the air. This station provides a continuing record of air pollution in the area. Sulphur dioxide was also used in studies initiated to determine the role of dust particles as carriers of toxic gases into the lung.

4. *Electron microscopic study of counting techniques for quartz dust* — This project arose from the need for improved techniques of quartz dust assessment in relation to health control in foundries and mines. Since the recruitment of a full-time electron microscopist late in 1955, investigation of the problem is proceeding.



### Investigation of Environmental Conditions

1. *Survey of arsenical waste at Yellowknife* — This study, begun in 1951, was continued. A five-year report was compiled in August, 1955. The findings indicated that collection of arsenic is still not adequate, and further improvements are being made. This study is continuing.
2. *Appraisal of the environmental problem in the new chemical industries* — This study was made in view of the exceptional growth of new chemical operations in Canada. The results were published in the International Labour Review.
3. *Investigation of environmental conditions in federal premises* — Special investigations of environmental conditions in federal premises were continued during the fiscal year. These included a study to determine whether mercury presented a possible hazard to the health of laboratory workers during handling of mercury-treated seed in a Department of Agriculture laboratory, from which evolved the development of a new method for the laboratory determination of mercury; and a series of investigations at the request of the Civil Service Health Division and Crown companies into lighting, noise and environmental pollution conditions considered to have an effect on the health of civil servants and other federal employees.

### Biological Research

The study of the esterase response of rats to chlorinated hydrocarbon chemicals, including pesticides and the solvent carbon tetrachloride, was completed in 1955 and the findings published in the scientific literature.

### Consulting Service and Other Functions

A report on dust suppression practices in Canada was prepared for the International Labour Office. This report is made annually.

Laboratory staff members continued to serve on various committees and boards which function in the interest of occupational health. Staff members also rendered extensive consulting service on day-to-day occupational health problems encountered by federal agencies, Crown companies and other occupational groups.

The chief of Laboratory Services visited all provincial centres in Canada in connection with the development of provincial industrial hygiene services. He also was responsible for organizing the analytical section of the Air Pollution Symposium to be held by the American Chemical Society in September, 1956. Another staff member was invited to address the Western New York section of this Society on microchemical identification of airborne particulate matter. A third member prepared a report covering maximum allowable concentrations of pesticides to be permitted in working environments. This report will be published in an international technical journal.

### Clinical Services

Many requests for medical and nursing advice and assistance were received during the year.

*Medical* — Medical personnel, in cooperation with laboratory staff, assisted in a number of surveys and studies, in either a supervisory or participant capacity. The following are some of the projects undertaken for federal government departments.

- (a) An investigation of a section of the Department of Mines and Technical Surveys where the presence of noxious fumes was suspected. The survey revealed the cause, and advice and assistance were given to control the hazard.



(b) The Post Office Department was advised on the problem of packaging tins containing caustic soda for safety in transit.

(c) Information on control of solvent vapours was provided to the National Film Board and a section of the Department of National Health and Welfare, where solvents were commonly used during work.

(d) Clinical and laboratory assistance were requested by the Department of National Revenue concerning problems of space allotments, illumination, ventilation, and heating in the premises of its Income Tax Division.

In addition, many enquiries concerning occupational health problems were dealt with, and advice given to provincial health departments, industries, local health agencies and other interested groups and individuals. Information was provided on such diverse topics as dust control, small plant health services and hazards of certain chemicals.

In cooperation with the laboratory staff, clinical members assisted with the preparation and presentation of a lecture course in occupational hygiene to members of the armed forces. This course was considered of great value since the armed services maintain many establishments and carry out procedures which present many of the same health hazards as are encountered in modern industry.

Requests for information were received from abroad, including Australia, Belgium, South America and France.

Members of the clinical services also prepared reports for presentation at conferences and seminars. Some of these have been published in divisional and other technical publications.

Although the work on pesticides has decreased, a member of the clinical staff continued to provide information on health hazards of some new pesticide products as a service to the Department of Agriculture.

## Nursing

Consistent with the division's consultant program, the nursing consultant continued to provide leadership and assistance in matters pertaining to occupational health nursing.

She attended and participated in various institutes for industrial nurses and presented papers at other medical and nursing conferences, among them, "The Role of the Employer in an Occupational Health Program". In addition, she prepared articles for publication in divisional publications and in other Canadian and in U.S. periodicals. Among these were articles on "Narcotics in Industry", "The Role of the Nursing Consultant in Occupational Health", and "Occupational Health in Canada," this last in collaboration with a division medical officer.

Other activities included meetings with provincial nursing consultants to discuss program organization, preparation of publications and other matters pertaining to the promotion of occupational health and the interpretation of occupational health nursing to industrial, commercial and other occupational groups and individuals.

In addition, the consultant assisted in civil defence training courses for nurses at the Civil Defence College, Arnprior, Ont., presenting a lecture on "Nursing Problems in Mass Disaster."

## Radiation Services

The Radiation Section continued to provide an advisory service to the Atomic Energy Control Board on the health supervision of the use of radioisotopes; in addition,



an advisory committee, consisting of leading experts, was formed to advise the AECSB on the clinical use of radioisotopes. Applications to use these materials clinically were reviewed in terms of adequate facilities and training, and visits were made to ensure safe handling practices.

*Field Monitoring* — This service was continued, and it is interesting to note that since it was first made available in 1950 the number of people served per year has increased from 400 to 2600; approximately two-thirds of these persons are X-ray workers.

*Consultant Service* — Advice and information were given on a number of queries about the health aspects of ionizing radiation. The recommendations of the International Commission on Radiological Protection were summarized and presented in a pamphlet for distribution to radiation workers. In response to the increasing interest in protection in diagnostic X-ray departments, as expressed by radiologists and X-ray technicians, the Radiation Services prepared a pamphlet on this topic.

*Use of Atomic Energy* — During 1955 it became apparent that atomic energy would soon be widely used for peaceful purposes. Realizing the implications of widespread exposure to radiation, to the health of the population, the Department of National Health and Welfare formed an advisory committee on low level radiation. As a result of meetings of this committee, radiochemical analysis of certain constituents of the environment was started and plans made to study somatic and genetic effects of an increasing radiation background.

*Committee Membership and other Functions* — A member of the Radiation Services was named to the Canadian Association of Radiologists' Subcommittee on Units, Standards and Protection, which made recommendations about shoe-fitting fluoroscopes, protection of the patient during radiography and leak testing of radium needles.

### **Air Pollution Consultant Service**

Owing to the growing importance of atmospheric pollution, the Department established in January, 1956 an Atmospheric Pollution Service within the Occupational Health Division.

### **Educational and Technical Information Services**

Of primary concern to the Division is health education, and to this end it continued publication of the *Occupational Health Bulletin*, the *Occupational Health Review*, the *Pesticide Bulletin* and the *Occupational Health News Letter*. Each publication is designed for a specific group of readers.

During the year the material for two pamphlets dealing with respiratory protection and solvents, respectively, was prepared. In addition, a number of articles from the *Occupational Health Bulletin* and the *Occupational Health Review* were reprinted in pamphlet form to satisfy increased demands for information. Such articles as "Static Electricity," "Common Industrial Injuries," "Carbon Monoxide," "Carbon Tetrachloride" and "Small Plant Health Services" were thus reprinted.

Three posters, two on eye protection and one on skin protection, were prepared and will be available in the new fiscal year.

*Guide to Diagnosis of Occupational Diseases* — This handbook was still in high demand and many copies were distributed throughout the year in response to requests both from Canada and abroad.

There was a very significant increase in the number of requests for occupational health materials from school teachers, health educators, nursing instructors and other



teaching personnel which would indicate an increased interest in this particular aspect of public health.

### National and International Representation

Several members of the division's professional staff serve on various national and international committees and boards.

The chief of the Division was the Canadian representative to the United Nations Scientific Committee on the Effects of Atomic Radiation which met in New York, March 14-25, 1956. The chief of the Laboratory Services attended the fourth session of the Chemical Industries Committee of the I.L.O., Geneva, Switzerland, as one of two Canadian delegates. The nursing consultant is a member of the Education Committee of the American Association of Industrial Nurses and serves on the editorial board of *Nursing World*. The Medical Consultant of the Radiation Service is a member of a committee of the International Commission on Radiation Protection which is concerned with the handling and disposal of radioactive isotopes.

### PUBLIC HEALTH ENGINEERING

During the past fiscal year the activities of this Division have remained essentially the same as in other years. The development of a sound shellfish program for the Province of Quebec has been effected, and extensive water quality studies were conducted in the shellfish areas of that province in cooperation with the Laboratory of Hygiene and provincial officials.

Pollution studies of various water courses continued to form an active part of the division's work. Many special projects have been studied and field investigations made at the request of other departments on matters pertaining to water supply and sewage disposal. The continued growth and industrial expansion taking place in Canada today has focussed attention on the need for specialized knowledge and research in public health engineering, and these problems are receiving particular attention.

The development of radar stations required that special emphasis be given to the question of sanitary conditions in construction camps in the far North and in others connected with National Defence projects and railway extension programs during the past year. Increased development in the far north has also presented special problems in the design of water and sewer services and the disposal of wastes.

Some changes in personnel took place during the year within the division's organization which consists of seven district and two sub-district offices. The lack of engineering recruits over the past few years has presented certain difficulties in the administration of statutory functions. Routine examinations associated therewith have been given as much attention as possible with a reduced staff. The many requests and opportunities for rendering valuable service to other departments on special problems related to environmental health have required increased attention during the year, and at times these requests have been given preference over other work.

The division has certain responsibilities by statutory authority on those phases of the environment having a bearing on the health of travellers, of operating personnel of railways, vessels and aircraft; of visitors to national parks and other federal property and of employees residing in camps on federal construction projects. International agreements governing the handling and shipping of shellfish and the enforcement of these protective measures form an important phase of the division's activities and responsibilities.



### Cooperation With Other Federal Agencies

The time and attention given to special projects at the request of other federal departments have formed an important part of the work carried on during the past year. Participation in the work associated with the relocation of Aklavik continued and involved attendance at a number of meetings. Officials of the Department most directly concerned consulted the division's district engineers on water, sewage and sanitation problems associated with this program. Advice was also sought by and recommendations made to the Department of National Defence and Defence Construction (1951) Limited on the establishment of water and sewage services in the far north. Many of these construction projects were visited and reported upon with recommendations being forwarded to the appropriate federal authorities for their attention. Field surveys were made and a sewage disposal system is being designed for a Defence Research Board location in Western Canada.

Continued assistance was maintained in the promotion of good operational technique at sewage treatment plants constructed by the Department of National Defence. New plants under construction were also assessed and recommendations made concerning their adequacy.

Engineering studies were requested at a number of existing federal sewage plants where present-day conditions warrant either an enlargement of the treatment facilities or the development of a more modern type of sewage treatment. Studies were continued at Valcartier in Quebec in regard to sewage disposal at the Small Arms establishment, lagooning of laboratory wastes at CARDE and the removal of oil from the arsenal wastes. Water quality studies were also made at the Cherrier plant of Canadian Arsenals Limited where prechlorination was found advisable as a treatment procedure.

Close cooperation was maintained with the Indian Health Services Directorate of this Department and with the Indian Affairs Branch of the Department of Citizenship and Immigration on matters of water supply, sewage disposal and on other aspects of environmental sanitation in the protection of the health of Indians at various reservations, residential Indian schools and hospitals. In this connection, 45 engineering studies and field surveys were carried out. The water supply and sewage disposal systems at the Moose Factory Indian Hospital, where extensive changes are required to meet present and anticipated future service demands, is cited as one of the major studies undertaken by the Division during the past year. Other time-consuming studies included the engineering survey at the Manowan Indian Reserve, which involved the collection of field data required for the preparation of plans to show in detail pumping arrangements, water intake location, and layout of the distribution system. Surveillance over control of water supply treatment was maintained through repeated visits to locations where outbreaks of disease, presumed to be water-borne, had been reported.

Field studies in the far north in cooperation with the Department of Northern Affairs and National Resources during the year include sanitary surveys of northern settlements; the examination and water quality assessment of Elk Island National Park water supplies; and the collection of field data relevant to the construction of a water and sewage system for the Town of Whitehorse and the new proposed townsite located on the opposite side of the river where a Northern Health Services hospital is planned. The plans of the proposed water and sewerage system as prepared by a firm of consulting engineers received careful study by the engineers of this division in relation to present and future requirements for sewage treatment facilities as proposed in the development plan for Whitehorse and the new townsite area. Future developments in this area and the possibility that the flow in the Yukon River in that vicinity may be reversed at a later date to increase the output of hydro-electric power made it necessary to give considerable time and study in evaluating the proposed water and sewerage systems. Other works associated with federal interest included water and sewage treatment at



Fort St. John and at Port Radium, the center of activities of Eldorado Mining and Refining Limited.

As in other years close liaison was maintained with the National Parks Branch on problems of mutual concern. Special projects conducted at their request during the year included: a water quality study of Waterton Lake in Waterton Lake National Park; investigation of the sewerage system and sewage treatment facilities serving the Waterton Lake townsite, to determine the remedial measures required to overcome present operating difficulties resulting from poor flow characteristics and flooding of treatment units; participation in a special study in the control and improvement of water quality at the Banff Hot Springs swimming pools; and a review of sewage problems subsequent to the preparation of a report on the requirements for adequate sewage treatment facilities at the new Alexander Graham Bell Museum at Baddeck, N.S., to assure protection to shellfish producing areas.

### **Public Works Health Act and Regulations**

The development of radar warning stations at selected points throughout the far north made it necessary for this Division to give special attention to problems of water supply, sewage disposal and sanitation of construction camps. Both temporary and permanent installations of these services had to be considered. The health aspects of camp sanitation and food handling in the protection of construction crews created many problems peculiar to the far north alone. In this connection, 16 visits were made to various sites by engineers of the Division. Technical assistance was given through conferences with officials of the construction companies responsible for the building of these radar stations. The response by the companies to recommendations made in the handling of the various environmental health problems encountered has been most gratifying. Adherence to sound public health principles of sanitation has been evident in the camps visited to date. In addition, 77 separate examinations were carried out under this Act, principally for the Department of National Defence (Army) project at Gagetown, N.B. Railway extension programs in the Quebec area from Beattyville to Chibougamau and at Schefferville (Knob Lake) also received attention in respect to construction camp sanitation under these regulations.

### **International Joint Commission**

The Division continued to be represented on a number of Advisory Boards to the International Joint Commission which deal with problems of water and air pollution. Its members participated in conferences held under the Commission's auspices. Projects initiated by the Advisory Boards and participated in by engineers of this division during the year with respect to pollution control of the boundary waters included a phenol survey of Lake Erie, a water quality study of Lake St. Clair and the installation of carbon filters at selected river points in the Sarnia area. This latter work was initiated to determine by the carbon filter extraction technique the concentration and the types of substances present in the waters of the St. Clair and Detroit Rivers and the relationship of these contaminants to taste and odour disturbances in downstream municipal water supplies. Several reported occurrences of tastes and odours in municipal water supplies in the Sarnia-Windsor-Detroit area during the past year received special study. These occurrences focused attention on the need for constant surveillance and control of the discharge of polluting materials into these waters.

### **Provincial Cooperation**

As in past years the Division, through committees and by liaison with health officials, maintained close cooperation with all provincial agencies on problems relating to environmental sanitation. Although no major incidents of taste and odour occurrences in municipal water supplies were reported by the Alberta health authorities in the



North Saskatchewan River area, close contact was maintained with officers of the provincial Health Department with respect to river water quality and measures taken for the abatement of pollution and control of wastes discharged into this water course.

At the request of the Newfoundland Department of Health assistance was given by the Division in a study made to improve the municipal water supply systems presently serving Curling and Cornerbrook. An algae problem attributed to the discharge of sewage treatment plant effluents into Lac St. Denis, Quebec, was studied following complaints by local residents. The results of this study indicated the need for the removal of the sewage outfall from the Lake, and this matter is under active consideration at the moment by the Department of National Defence (Air).

### **Water Treatment Problems**

Problems due to the presence of iron bacteria in water supplies received special study during the year. At Sydney, N.S., and at Lac-des-Loups, Quebec, at the request of the Department of Transport, microscopic examinations were carried out to identify and type the iron bacteria presumed present, and iron removal experiments were conducted in an effort to improve the quality of water at these two points. Research through field experiments was continued in the application of copper sulphate to the water supply at Bowness, Alberta, in the control of iron bacteria growths. This water supply is under the control of the Department of Veterans Affairs, and it is through their desire and cooperation that these studies were initiated and are being continued.

### **Shellfish Control**

Control of the shellfish industry continued to require much time and effort in those provinces in which shellfish are produced commercially for export. The watershed, extending 40 miles east from Point Miguasha in the Baie-de-Chaleur, was surveyed in company with public health engineers attached to the Quebec Department of Health. Assistance in this survey was supplied by the federal Laboratory of Hygiene through the use of its mobile laboratory. Initial surveys and re-surveys of shellfish-producing areas were conducted throughout Prince Edward Island, Nova Scotia and New Brunswick, consistent with the need to obtain current data on existing water quality conditions overlying active shellfish-producing areas. Careful surveillance of all toxicity reports for individual areas was maintained, and closure proceedings were taken for those areas where high toxicity levels warranted such action. Throughout the growing season regular examinations of commercial shellfish plants were made. Irregularities in processing and handling of the shucked shellfish or in matters of general sanitation, observed during these routine examinations, were brought to the attention of the Department of Fisheries for necessary remedial action. In British Columbia the cooperative control program has been continued with the Department of Health and Welfare.

### **Laboratory Services**

During the year the analytical services formerly handled at the laboratory at William Head, B.C., were temporarily suspended due to the retirement of the Division's chemist, Mr. F. E. Artlett. Arrangements were made with the Food and Drug Laboratories at Vancouver to continue this service on a limited basis until a replacement was obtained.

The laboratory facilities at St. Catharines, Ont., continued to render service to federal departments for chemical and mineral analyses of water supplies. These facilities continued to be hard pressed due to staff limitation in keeping abreast of the analytical services requested. Special problems related to the presence of iron bacteria in public water supplies, the fluoride content of domestic raw water sources, and other aspects of water quality, such as corrosion and hardness control, were studied. Effective treat-



ment and control procedures were recommended to the authorities concerned, based on the analytical findings and on an appraisal of the particular problem involved.

## Grants

For the fiscal year 1955-56 more than \$771,110 was allotted under the National Health program for the support of environmental sanitation services. Of this figure, \$108,430 was for training purposes, \$68,734 for research and \$593,946 for the employment of staff for local health units and city health departments.

## Educational Services

A number of technical papers were presented before professional gatherings or conferences by members of the Division. Lectures on water treatment and vessel sanitation were given to student officers at Marine Schools in Quebec. A series of lectures was given to fisheries inspectors in Ontario on water supplies for fish processing plants, waste and offal disposal and on other related sanitation problems. This was done at the special request of the federal Department of Fisheries. On two occasions the Division participated in emergency feeding courses at the Civil Defence College, Arnprior, Ont., by presenting lectures on water supply and food sanitation problems.

The Division continued to publish the monthly news bulletin "Public Health Engineering in Canada" at the request of the Advisory Committee on Public Health Engineering. No new publications were printed during the year owing to the utilization of available funds to reprint certain existing publications such as "Domestic Sewage Disposal", "Rural Waters" and others in both French and English, to meet the heavy demand for such material. A revision of those sections of the Civil Defence Health Service Manual dealing with water and sanitation was commenced by officers of this Division. This work is to be completed early in the new fiscal year. This revision was prompted by a change in concept of the civil defence program with respect to the emphasis now placed on the need to evacuate populations from target areas in the event of attack.

## Training Courses

Training for certain division personnel in specific phases of public health engineering was possible on several occasions by taking advantage of short courses at the Robert A. Taft Sanitary Engineering Centre at Cincinnati and by attendance at industrial waste conferences. A seminar on industrial wastes problems arranged by the Ontario Department of Health proved to be of much value to the Division both in exchange of technical data and the experience gained in the discussion of treatment methods in dealing with industrial wastes of a complex character.

## Field Work Summary

In all, 626 sanitary surveys of water supplies, ice supplies (natural and artificial) and shellfish growing areas were conducted. A total of 5,003 water samples, 124 ice samples, 35 sewage effluent samples and 118 milk samples were taken for analysis. Some 764 examinations of railway property including stations, restaurants, bunkhouses, mobile work camps, coachyards and oil wastes disposal were made. A total of 109 examinations were made of sewage treatment plants to check their operation. During the year some 203 vessels' water systems were examined for compliance with statutory regulations, including nine new vessels under construction, for which plans were submitted to this division for review.



## Health Grants Administration

The eighth year of the National Health Grants program was marked by the continuation of advances made possible in previous years by federal grants-in-aid to the provinces specifically for the development of public health services, research, and hospital construction.

### Expenditures

Federal expenditures under this program totalled \$33,528,853 during the fiscal year. Payments to the provinces for the eight-year period now total more than \$188,250,000.

In almost all the 12 categories of grants, the percentage utilized by the provinces out of the total amount available increased. Particularly noteworthy were the increases in the fields of medical rehabilitation, child and maternal health and laboratory and radiological services. These three grants were inaugurated in the 1953-54 fiscal year, and the increase in expenditures indicates the growth of provincial programs in these important segments of public health.

### Public Health Progress

The various specialists within the Health Branch act as consultants to the Health Grants Administration on the public health aspects of projects within their special fields. References to the impact of the grants on particular public health problems will, accordingly, be found in appropriate sections of this Report.

In general, the grants are contributing to the extension of local health services in both rural and urban areas; the training and employment of many categories of health workers; the expansion of existing hospital buildings and the erection of new ones; the control of tuberculosis, venereal and other communicable diseases; the development of improved cancer diagnostic and treatment facilities, of laboratories for the diagnosis of disease and of medical rehabilitation services to restore patients to the maximum degree of health and productivity; the treatment of crippling conditions in children; the extension of services to prevent and treat mental illness; the improvement of care given to mothers and their children; and the encouragement of sound research in public health.

All these activities contribute not only to better health among the present generation of Canadians but will also have lasting effects for the future.

### Surveys and Studies

A report on the operation of the grants during their first seven years was prepared and issued under the title "National Health Program, 1948-1955". This report reviewed the major achievements of the grants and attempted to evaluate their influence on the development of public health in Canada.

In co-operation with the Dominion Bureau of Statistics, three additional bulletins based on data obtained in the 1950-51 Sickness Survey were issued. These dealt with national estimates of the incidence and prevalence of illness, of the volume of health care, and of the volume of health care for selected income groups.

During the year statistical and other information was supplied to other divisions of the Department to assist them in the preparation of studies and reports on trends and



developments in a variety of health fields, including tuberculosis control, hospital construction and programs of hospital and medical care insurance. In this connection, the Grants Administration gave attention to patterns of activity developing in other countries, particularly the United States, where comparable programs of grants-in-aid are operating.

## **Publications**

In September, 1955, a paper on "Unmet Health Needs in Health Care in Canada" was presented at the annual meeting of the Canadian Public Health Association. This was published in the January, 1956, number of the Canadian Journal of Public Health.

## **Provincial Co-operation**

During the year, both at meetings of the Dominion Council of Health and on other occasions, opportunities have been utilized to discuss with provincial health authorities their plans and programs, as well as day-to-day administrative problems. These exchanges of views have been most useful and have helped to maintain the spirit of federal-provincial co-operation which has characterized the grants program since its inception.

## **Health Insurance Studies**

As a result of the interest in Health Insurance manifested at the Dominion-Provincial Conference in the spring of 1955 Health Insurance was brought into sharper focus during the past year. At that time it became evident that a number of the provinces were interested in a discussion of federal-provincial arrangements for health insurance. The subject was further discussed at the fall meetings of the Dominion-Provincial Conference and, as a result of these discussions, a committee consisting of Ministers of Health and Ministers of Finance from both the federal and provincial governments was constituted to discuss the matter in further detail. A meeting of these ministers was held in January 1956. At that time the activities of the federal and provincial governments, in the field of health, were reviewed in detail as were the activities of voluntary agencies providing insurance coverage for hospitalization, medical care and related services.

During the January meeting an offer was made by the federal government to provide financial and technical assistance to provincially-organized and administered programs for the provision of hospital care and diagnostic services, if a majority of the provinces representing a majority of the population were prepared to organize and administer these programs. It was indicated that the federal government would then be prepared to recommend to Parliament that it provide, by legislation, grants to cover a share of the cost of these elements of Health Insurance.

In order to qualify, the provinces should make coverage for hospital services universally available to all persons in the province and may include provision of specified diagnostic (laboratory and radiological) services to persons in hospital or to outpatients. At the same time provision should be made for a limit to be placed on co-insurance or deterrent charges so as to ensure that an excessive financial burden is not placed on patients in respect of hospitalization costs at the time of receipt of service. Shareable costs would be determined on the basis of normal operating and maintenance costs insofar as these relate to standard ward care. These shareable costs would not include the following items: capital costs, extra costs properly attributable to the provision of semi-private and private ward care, the uninsured portion of a patient's hospitalization



costs, and provincial administrative costs. Costs of care provided to patients entitled to care under DVA, Workmen's Compensation, third party liability, or similar arrangements, would also be deducted in determining shareable costs. There would likewise be excluded from any plan in which the federal Government would share, the costs of caring for patients in mental hospitals or TB sanatoria. The federal Government will pay to each province which operates a recognized plan a portion of the "shareable" costs as follows: (a) 25 per cent of the average per capital costs for hospital services in Canada as a whole; plus (b) 25 per cent of the average per capita costs in the province itself.

Since that time three provinces have indicated their acceptance in principle of the federal offer and discussions are now going forward at the official level regarding details of these programs.

These developments in the health insurance field called for extensive research and technical study covering the whole field of health care. For example, the Health Insurance Studies section, in co-operation with the Research and Statistics Division, prepared necessary documents covering existing health services in Canada at both the federal and provincial level as well as programs sponsored by voluntary insurance agencies.

At the same time a number of publications concerned with the development of programs for the provision of medical and hospital care has been released. During the past year the following reports have been prepared and distributed: *Selected Public Hospital and Medical Care Plans in Canada*; *Voluntary Medical and Hospital Insurance in Canada*; *Health Care in Canada*; *Expenditures and Sources of Revenue, 1953*; *Hospitals in Canada*; *Tuberculosis Services in Canada* and *Government Expenditures and Related Data on Health and Social Welfare, 1947 to 1953*. The following publications concerned with the Canadian Sickness Survey were produced co-operatively during the year by the Dominion Bureau of Statistics and the Department of National Health and Welfare: *Incidence and Prevalence of Illness* and *Volume of Health Care for Selected Income Groups*.

Work was continued on a proposed publication *Canada's Health Services*, which is based on the health surveys financed by the National Health Grant Program and it is anticipated that the major part of this work will be published during the year 1956-57. Foreign developments, particularly in Scandinavia and the United Kingdom, have been kept under review and further material will be published during the next year covering European programs.

## Research Development Services

### MEDICAL RESEARCH

The scientific research program for the fiscal year 1955-56 involved a total of \$2,495,822.01. Of this amount \$569,700. was made available for intramural medical research, \$202,085. for socio-economic research in health and welfare, \$1,619,254.91 for extramural grants-in-aid of medical research and \$104,782.10 for research sponsored by the National Cancer Institute of Canada.

The intramural program encompasses those investigations carried on by the various technical and scientific units of the Department and, in general, is aimed at devising new or improved methods of performing the service functions of these divisions. It refers particularly to detection and assay work, e.g., that associated with the administration of the Food and Drugs Act, and studies of new techniques such as in the control



of biological products or the investigation of occupational hazards. Additionally, however, it may be aimed at gaining new knowledge of public health importance or related to urgent national health problems of a nature not ordinarily undertaken by a single province, university or research institution, concerning which the Department may be looked to for leadership and guidance.

Estimated allocations for the intramural research program for 1955-56 are presented at the end of this section in Table 7 according to the divisions concerned. It should be borne in mind that the almost inseparable relationship of research to service functions throughout the intramural program makes it difficult to determine as precisely as might be desired the proportion of the cost which can properly be designated as research expenditure. In many instances the research is a by-product of the service function.

Allocations by the Research and Statistics Division for socio-economic studies in health and welfare have not been included in this table because of the dissimilarity, in general, from the research carried on in the other divisions. Detailed reference is made to the activities of this Division in a special section of this Report.

The extramural program consists of grants-in-aid of medical research conducted in universities, hospitals and other research institutions from funds provided under the National Health Program. This began in 1948 with an amount of \$100,000 initially in the Public Health Research Grant. Each succeeding year this was increased by a like sum up to a maximum of slightly more than \$500,000, at which level it now stands. Additionally, allocations from other health grants have been made in support of medical research centered generally in the field for which the grant is specifically designated.

For the 1955-56 fiscal year funds devoted to medical research under all grants amounted to almost \$1,620,000. Specific allocations according to grant and province will be seen in Table 8. The allotment from the Cancer Control Grant totalling \$104,782.10 is matched by provincial funds and utilized under the auspices and supervision of the National Cancer Institute of Canada for fundamental research in this field.

In Table 9 details of allocations, numbers of projects and percentages of the total funds are presented, according to the field of medicine concerned. Table 10 includes like information on the basis of the disease entity being studied. So far as the fields of medicine and disease entities are concerned, individual areas are not clearly defined, particularly in the former case, and there tends to be considerable overlapping, e.g., those designated as biochemistry studies may also have a definite relationship to cardiology or to psychiatry. Similarly, studies in the field of cardiology may also have a significant component of animal experimentation.

In broad general categories according to the field of medicine, investigations which might be classified as clinical account for some 40 per cent of the total. In this group those in the fields of cardiology, neurology, geriatrics and internal medicine cover about 21 per cent, while psychiatric and psychological research make up 19 per cent. Basic studies such as those in biochemistry, pharmacology and therapeutics, pathology and physiology involve more than 23 per cent and studies in the general field of bacteriology, including virology, B.C.G. and the tubercle bacillus, make up better than 16 per cent of the total. Those related to the birth period, infants and children total 7 per cent, while research on administrative aspects, medical economics and epidemiology amount to 3 per cent.

In regard to disease entities, a large proportion, nearly 25 per cent, cannot be classified because of the non-specificity of the objective of the research or the complete



absence of any relationship to a disease. Excluding this group, it is found that more than 31 per cent of the remaining studies deal with tuberculosis and other respiratory diseases, influenza and other infectious conditions. Psychosis, neurosis and psychoneurosis are involved in about 20 per cent, heart, arteriosclerosis and hypertension total some 13 per cent and diseases associated with pregnancy and the neo-natal period more than 7 per cent.

Table 7  
ALLOCATIONS FOR INTRAMURAL RESEARCH PROGRAMS  
1955-56

<i>Division</i>	<i>Estimated Expenditure</i>
Civil Aviation Medicine.....	\$ 2,500
Dental Health .....	18,000
Epidemiology .....	31,000
Food and Drug Directorate.....	112,000
Laboratory of Hygiene.....	257,000
Nutrition .....	35,000
Occupational Health .....	114,200
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Total.....	<u><u>\$569,700</u></u>

TABLE 8

ALLOCATIONS FOR RESEARCH UNDER THE NATIONAL HEALTH PROGRAM  
 BY HEALTH GRANT AND BY PROVINCE — 1955-1956

PROVINCE	Crippled Children	Venereal Disease	Mental Health	Tuberculosis Control	Public Health Research	General Public Health	Child and Maternal Health	Total
Nova Scotia.....			30,000.00		29,421.66			59,421.66
New Brunswick.....			4,800.00		6,841.66			11,641.66
Quebec.....		575.00	156,763.60	17,990.00	203,021.20	127,707.95	8,343.50	514,401.25
Ontario.....	42,046.38		252,838.14	74,499.97	185,560.20	177,212.56	43,094.00	775,251.25
Manitoba.....			14,838.50		15,493.75	17,320.00	17,320.00	64,972.25
Saskatchewan.....			47,691.73	8,899.61	24,240.00			80,831.34
British Columbia.....			70,541.75		34,493.75	1,700.00		106,735.50
Northwest Territories.....					6,000.00			6,000.00
TOTAL.....	\$ 42,046.38	\$ 575.00	\$577,473.72	\$101,389.58	\$505,072.22	\$323,940.51	\$ 68,757.50	\$1,619,254.91

NOTE — Assistance to National Cancer Institute: P.E.I.....\$ 905.00      New Brunswick.....\$ 7,500.00      Quebec.....\$36,209.60  
 Ontario.....41,831.00      Manitoba.....11,000.00      Saskatchewan.....7,336.50  
 TOTAL.....\$104,782.10



TABLE 9  
RESEARCH ACCORDING TO FIELD OF MEDICINE  
NATIONAL HEALTH PROGRAM—1955-56

Field of Medicine	Amount	No. of Projects	Percent of Total
Psychiatry and Psychology.....	\$ 308,070.03	19	19.0
Biochemistry.....	152,617.85	18	9.5
Virology.....	130,956.38	14	8.1
Pharmacology and Therapeutics.....	127,868.22	19	7.9
Cardiology.....	120,072.75	18	7.4
Neurology.....	105,330.00	13	6.5
Bacteriology.....	67,820.70	14	4.2
Tubercle Bacillus including B.C.G.....	63,145.60	15	3.9
Obstetrics and Gynaecology.....	58,626.20	8	3.6
Special Senses.....	55,365.80	6	3.4
Pediatrics.....	51,347.93	6	3.2
Geriatrics.....	43,249.85	2	2.7
Tuberculosis.....	37,620.16	6	2.3
Pathology.....	36,518.17	6	2.2
Internal Medicine.....	35,878.08	6	2.2
Physiology.....	31,782.50	5	2.0
Hematology.....	29,588.80	5	1.8
Administration.....	24,752.66	5	1.5
Epidemiology.....	24,426.00	2	1.5
Other—Miscellaneous.....	114,217.23	17	7.1
TOTAL.....	\$1,619,254.91	204	100.0

TABLE 10  
RESEARCH ACCORDING TO DISEASE ENTITY  
NATIONAL HEALTH PROGRAM—1955-56

Disease Entity	Amount	No. of Projects	Percent of Total
Unclassifiable*.....	\$ 383,140.24	37	23.6
Psychosis.....	243,615.72	19	15.0 (19.8)
Tuberculosis (Respiratory).....	154,996.62	29	9.6 (12.6)
Heart Disease.....	139,798.75	21	8.7 (11.3)
Infectious Disease.....	135,932.17	18	8.4 (10.9)
Other Respiratory.....	75,716.37	8	4.7 ( 6.1)
Eye.....	67,604.26	6	4.2 ( 5.5)
Neonatal Period.....	58,535.70	10	3.6 ( 4.7)
Nervous System.....	57,978.25	9	3.6 ( 4.7)
Bones and Organs of Movement.....	47,572.01	8	2.9 ( 3.8)
Pregnancy.....	33,106.80	6	2.0 ( 2.7)
Poisoning, Alcoholism and Drug Addiction.....	28,800.00	2	1.8 ( 2.3)
Mouth and Teeth.....	25,612.20	2	1.6 ( 2.1)
Arteriosclerosis and Hypertension.....	20,000.00	1	1.2 ( 1.6)
Accidents.....	18,875.25	2	1.2 ( 1.5)
Influenza.....	12,779.62	2	0.8 ( 1.0)
Blood Disorders.....	12,023.50	2	0.7 ( 1.0)
Neurosis and Psychoneurosis.....	11,311.25	2	0.7 ( 0.9)
Tuberculosis—Other Forms.....	11,300.00	3	0.7 ( 0.9)
Liver, Gall Bladder, etc.....	10,650.00	2	0.7 ( 0.9)
Other—Miscellaneous.....	69,906.20	15	4.3 ( 5.6)
TOTAL.....	\$1,619,254.91	204	100.0 (100.0)

\* No specific disease involved. (Epidemiology Division follows).

## EPIDEMIOLOGY DIVISION

During the year this Division has continued its efforts in the investigation and control of disease. Although the decline in the relative importance of the communicable diseases has indicated some redirection of efforts towards the chronic diseases and conditions such as accidents, which are assuming increasing importance in public health, the investigation of specific communicable disease problems has been of considerable interest. Among the activities of the Epidemiology Division, particular mention may be made of the following.

*Poliomyelitis* continued to be the communicable disease foremost in public attention, and the widespread use of poliomyelitis vaccine in all Canadian provinces during the year presented an opportunity to evaluate its effectiveness in preventing the paralytic complications of this disease. With the co-operation of the provincial health departments, a careful account was made of all paralytic cases of poliomyelitis occurring between July 1 and November 30 in children of selected ages who had received two or more doses of vaccine in 1955 prior to July 1, and in an observed control group of unvaccinated children of comparable ages. This enabled a comparison of paralytic attack rates in vaccinated and unprotected children to be made.

Although the general incidence of paralytic poliomyelitis in Canada was exceptionally low in 1955, it was possible to demonstrate that in all provinces where paralytic poliomyelitis occurred in the vaccinated or unvaccinated groups, the attack rates in the unvaccinated exceeded the attack rates in the vaccinated during the period of observation. Plans are being made to continue the evaluation of the vaccine during the 1956 poliomyelitis season.

Weekly telegraphic reports of the occurrence of poliomyelitis during the poliomyelitis "season" were received from each province. These reports were analysed and consolidated, and weekly statements on the current situation were supplied to interested agencies in Canada and other countries.

*Tuberculosis*—The decline in tuberculosis mortality and morbidity continued in the year under review. It is significant that, although morbidity continues to decline, it has not kept pace with the decline in mortality. The Tuberculosis Control Grant of the National Health Program continued to play an important part in the control of tuberculosis. The Epidemiology Division gave continued assistance to the Principal Medical Officer administering the National Health Grants in connection with the Tuberculosis Control Grant.

This Division participated in the preparation of "Trends in Tuberculosis Incidence and Control, 1938-1953", a collection of data which allows an evaluation to be made of trends over the past few years with the objective of facilitating control measures for the future. This useful publication has also been revised and brought up to date.

*Veneral Diseases*—The decline in the incidence of venereal diseases in recent years continued in 1955 and, as in tuberculosis, the support given to provincial venereal disease control divisions by the Venereal Disease Control Grant has contributed to this decline. This Division has continued to advise the Principal Medical Officer of the National Health Grants in the administration of the Venereal Disease Control Grant.

Revision of the booklet "Venereal Disease — What You Should Know" for lay educational use in venereal disease control programs has been completed. Statistical data concerning the venereal diseases have been collected and analysed, and the publication of the semi-annual Statistical Report on the Incidence of Venereal Diseases in Canada has been continued.



*Influenza*—This Division, as a member of the Canadian Influenza Information Centre, has provided a service for the collection and dissemination of information concerning the occurrence of influenza-like disease in epidemic form in Canada and other countries.

*Reporting of Communicable Diseases*—A review of existing communicable disease reporting and control procedures has been in progress for some time, but as an outcome of a meeting of provincial communicable disease control directors in May, 1955, substantial progress was made during the year. A minimum list of communicable diseases designated as reportable was agreed upon, and uniform measures for their control were accepted in principle. In association with the Dominion Bureau of Statistics, methods of reporting communicable diseases are under review which will lead to improvement in the reporting of these diseases.

*Home Accidents*—Accidents are the fourth leading cause of death in Canada, and in ages five to 45 years, accidents kill more Canadians than any other single cause. Accidents occurring in the home occupy an important place in the accident picture since approximately 27 per cent of all accidental deaths occur as a result of home accidents. This Division completed during the past year a study of 1,000 home accidents resulting in injury requiring treatment in hospital out-patient departments, with particular attention to the type of accident and injury that occurred, and the environmental and personal factors contributing to their causation.

*Lung Cancer* is a disease of increasing prevalence, particularly in males, and has now outstripped tuberculosis as a cause of death in Canada. This Division, in association with the Department of Veterans Affairs, has in progress a study to investigate the relationship of urban and rural residence, occupation and smoking habits, to death from lung cancer and certain other selected causes in a large population.

*Effects of Air Pollution on Health* is a problem receiving an increasing amount of attention in Canada and elsewhere. This Division participated in the planning and conduct of a two-year study in the Detroit-Windsor area to evaluate methods of approach and, if possible, to determine what effects on health, if any, would be expected to result from the levels of air pollution present in those areas. The field work of the study was completed in June, 1955, and the data obtained are now being analysed.

*The Technical Information Section* of the Division regularly receives some 150 medical journals and reports. Articles pertinent to the work of the Division are abstracted and indexed, and reprints are obtained of articles of particular interest. Some 12,000 subject cards and 9,000 author cards are kept on file in addition to 4,000 reports and reprints of articles. This continuing review of current material is invaluable for divisional purposes and for answering the hundreds of requests for information received each year on a wide variety of subjects.

## LABORATORY OF HYGIENE

As Canada's national reference laboratory in the field of public health, the Laboratory of Hygiene continued to play a leading role in major health conservation activities during the past year. It performed vital services in connection with the control and testing of poliomyelitis and other vaccines and carried on investigations and research in many related scientific fields.

The Laboratory of Hygiene embraces bacteriological, biologics control, clinical, biochemical research, virus and zoonoses laboratories, with associated animal breeding and test animal colonies, as well as extensive administrative services required in connection with the highly scientific procedures performed by its specialists.



Activities in the various phases of the work of the Laboratory of Hygiene are reviewed in the following reports of its component units.

### Bacteriological Laboratories

These laboratories consist of three main sub-subsections—1) *Enteric Bacteriology*, 2) *Sanitary Bacteriology* and 3) *General Bacteriology*, with a total establishment of 16 professional or technical persons. In general, the aims of the Laboratories are 1) to provide technical assistance to the provinces by supplying carefully standardized diagnostic reagents, by performing special tests (not practicable at the provincial level) by acting as a national reference centre for the identification of special groups of organisms, and by giving special training to key laboratory personnel, 2) to assist other branches of government with the sanitary control of shellfish-producing waters and of restaurants and 3) to conduct research and special investigations. The Section succeeded in meeting all its commitments but the research and special investigation seriously suffered due to staff shortage.

*Enteric Bacteriology.* The Enteric Bacteriology Section embraces the National Salmonella and Shigella Typing and Reference Centres for Canada. In addition to the diagnostic service provided by these centres to the provincial Departments of Health and D.V.A. Hospital Laboratories in the identification of all members of the enterobacteriaceae, diagnostic reagents were supplied to all laboratories. With the addition of Ontario recently to its distribution list, this Laboratory is now supplying all the provincial laboratories with all the Salmonella antigen suspensions which they use. The diagnostic reagents prepared and distributed by this Laboratory consisted of 10 Salmonella antigen suspensions, 4 Salmonella Polyvalent sera, 7 Salmonella O grouping sera, 11 Salmonella Diagnostic H sera, 5 Shigella Polyvalent sera, 2 *Esch. coli* serum pools, 19 *E. coli* diagnostic sera and 2 Alkalescens-Dispar Polyvalent O sera. The preparation of diagnostic sera is expensive and time-consuming, requiring the preparation of vaccines, the inoculation of rabbits, testing and absorption of sera — and each year the demands for this sera increase.

This year, 1,873 ml. of sera were distributed as against 1,392 ml. last year, an increase of 34.5 per cent. A total of 231,750 ml. of standard antigen suspensions were distributed during the year. With the additional supplies now required by Ontario, there will be a further increase of these reagents to be supplied during the next year. Also, 723 cultures were received for special identification, 506 of which were identified as Salmonella and serotyped, 117 as Shigella, 11 as Alkalescens-Dispar, 23 as *E. coli* and 66 as belonging to other genera.

Information was collected on the distribution of these organisms in Canada and reports were issued quarterly to the provincial laboratory directors and annually to the Technical Advisory Committee on the incidence and special epidemiological features of the infections caused by these organisms.

Twenty-three different Salmonella serotypes were isolated from the strains of human origin and 15 from the animal strains. The predominant types among the 'human' strains received were *S. typhi-murium* (31.7%), *S. heidelberg* (15.7%), *S. newport* (15.7%), *S. typhi* (12.8%) and *S. paratyphi B* (6.4%) and among the animal strains *S. typhi-murium* (31.3%) *S. gallinarum-pullorum* (15.2%), *S. thompson* (11.4%) and *S. bredeney* (8.4%).

Two types were reported in Canada for the first time during the year. *S. illinois* was isolated from a woman in Quebec in May and *S. siegburg* from a baby with diarrhea, in Vancouver, in December and later from two children in Regina in February.



The most common *Shigella* type received was *Shig. sonnei*, which accounted for 67.5 per cent of all strains received. Attention has been drawn in England and Wales to a change during the last 20 years in dysentery from a comparatively rare and fatal disease with a case fatality rate of 39 per cent to a mild and widely prevalent disease with a case fatality rate of less than 1 per cent. This change is attributed almost entirely to the rapidly increasing prevalence of Sonne dysentery. The same picture seems to be evolving in this country. Alberta, Ontario and British Columbia showed a high incidence of infection and *Shigella sonnei* was isolated from over 80 per cent of the reported *Shigella* infections.

Active research was carried out on the application and limitations of bacteriophage in inducing antigenic and morphological changes in the *Salmonellae*. This entailed a study of the various factors affecting 'transduction', such as time, temperature, absorption media with respect to the valency of electrolyte used, capacity of various cells to function as donors and recipients of genetic material carried by phage, and finally practical applications of transduction in the laboratory. Transducing phage was isolated from a hitherto unreported source and new morphological variants of certain types reported for the first time. This phenomenon has important implications in the epidemiology of salmonellosis and practical applications in the routine identification of strains of salmonella. It has proved most useful in restoring motility to non-motile, and therefore untypable, strains and thus permitting their identification by serological analysis. Additional studies showed a wide distribution of these transducing phages in strains isolated in Canada.

Diarrhea continues to be serious cause of loss in the monkey colony. Two pathogens—*S. typhi-murium* and *Shig. flexneri 2a* were isolated from diseased animals. Antibiotic sensitivity tests indicated the choice of drug for treatment and the monkeys were fed this in their diet with encouraging results.

For four months, this Laboratory had for special training in enteric bacteriology, under the Colombo Plan, Captain S.B.V. Rao, Research Officer, Indian Veterinary Research Institute, and the opportunity of lending assistance to India was welcomed. In addition to the special training, a gift was made to Dr. Rao of 42 different antisera (520 ml.) together with 72 lyophilized stock cultures to allow him to establish a diagnostic unit in India.

*Sanitary Bacteriology.* An important activity of the Sanitary Bacteriology Section is the bacteriological control of shellfish-producing areas in the eastern Maritime Provinces. Routine surveys of areas are carried out during the summer in a mobile laboratory. Results of these surveys, together with sanitary surveys carried out by officers of the Public Health Engineering Division, form the basis for the closure or approval of areas for the taking of shellfish and for the certification of shippers by the Department for export of shellfish to the United States. In all this work close collaboration is maintained with the Department of Fisheries and with the U.S.P.H.S.

An increased demand for soft shell clams for export to the U.S. caused the Province of Quebec to consider the exploitation of clam stocks and to seek the advice and assistance of the Department in the control of clam producing areas within the province. For the first time a bacteriological survey was carried out by the Mobile Laboratory team in cooperation with the Quebec Department of Health; a 35 mile portion of the Baie de Chaleur coast between Point Miguasha and Cap Noir was studied, and recommendations for the closure of six separate portions of the area on account of sewage pollution were made.

Bacteriological surveys were also carried out in the Jacquet and Eel Rivers, N.B. and in Wallace Harbour, N.S.



A total of 1,364 water and shellfish specimens were collected and tested in the course of these surveys and reports and recommendations were presented to the Inter-departmental Shellfish Committee.

*Shellfish Toxicity Control.* The scheme used in 1953-55 for the routine control of toxicity in clams and mussels was again followed in 1955-56. A total of 654 shellfish extracts, collected from the following sources were tested for "paralytic shellfish poison" during the year:

New Brunswick	204
Nova Scotia	31
Quebec (south shore)	314
Quebec (north shore)	92
Canned clams	13

The lowest maximum on record, 420 mouse units, was observed at the Bay of Fundy key station; the remaining Fundy and Baie de Chaleur areas showed no evidence of toxicity and consequently no closures were necessary.

The Metis Beach — Baie des Capucins area on the south shore of the St. Lawrence River, where tragic poisonings occurred in 1954, was again dangerously toxic throughout the sampling period and the permanent closure of this area remains in effect. The remainder of the study areas on the south and north shores are affected seasonally, and careful control will be necessary when commercial exploitation begins. The Quebec sampling scheme, conducted with the excellent cooperation of the Quebec Department of Fisheries, will be continued in 1956-57.

The control of toxicity in shellfish has been a problem of concern to health authorities in this country and in the U.S. for many years. In May 1955, the U.S. Public Health Service sponsored a conference in Washington with the principal objective of establishing a uniform procedure for the bio-assay of shellfish poison. Represented at this conference were various State and U.S. Federal agencies together with the Food and Drug Directorate and Laboratory of Hygiene of the Department of National Health and Welfare. One of the most important results of this conference was the adoption of a purified poison as a tentative reference standard. This laboratory is collaborating in a study of this 'reference' standard, prepared by the U.S. Army Chemical Corps, and preliminary data have been reported. The use of a Reference Standard will provide a common base line for the standardization of toxicity tests carried out in the different laboratories in Canada and the U.S. and constitutes an important step forward in the control of the toxicity problem.

*Research.* A special project on the relationship between the fecal bacterial control of oysters and sea water was carried out at Summerside, P.E.I. during August to October. Approximately 1,350 tests were made on more than 400 specimens of oysters, sea water and sewage effluent. The productivity of various bacteriological media and techniques for the isolation of coliform bacteria and enterococci was investigated and 1,286 coliform strains were isolated and classified. The results indicated that long term investigations of the bacteriological quality of shellfish-producing areas will be required for adequate assessment of safety; the mean coliform results, however, indicate that the 230 and 50 M.P.N. closure limits for oysters and water respectively are reasonably comparable and effective. The data did not justify the inclusion of the enterococcus test or the Membrane Filter test for coliform bacteria in routine shellfish surveys. The coliform MPN and MF tests gave results which were in agreement for 75 percent of the sea water samples, but the two tests do not measure precisely the same groups of organisms. The incidence of *Esch. coli* types decreased, and that of *Acrobacter* and para-colon type increased in sea water and oysters, with the distance from the pollution source. It was concluded that these latter types are indices of remote pollution. All data



from the investigation were included in a report to the Interdepartmental Shellfish Committee.

The relationship between the Standard Methods MPN test and the Membrane Filter test for the estimation of coliform densities received further study. Data from field studies (1952-55) were collected and analysed. Sixty-seven coliform and paracolon strains were used in experiments on the productivity of the two tests. It was found that the recovery rate of pure culture coliform organisms by the MF test was only about one-half as great as by the MPN or Standard Plate Count tests. In addition, many slow lactose-fermenting strains developed with characteristic coliform-like sheen on the MF membranes. This study has now been completed and a paper is being prepared for publication.

*Restaurant Surveys and Miscellaneous tests.* As in past years, the Laboratory has assisted the departmental Canteen Committee in assessing the bacteriological and sanitary conditions in restaurants operated in government buildings in Ottawa. Four restaurants were inspected, and utensils, used in the preparation and serving of food, were bacteriologically examined: the data, together with recommendations regarding the control of sanitation in these establishments were submitted to the Canteen Committee.

Fifty (50) water samples were tested bacteriologically during the year (23 for the Public Health Engineering Division and 27 for other agencies).

Of 125 specimens of meat submitted by the Food and Drug Directorate, six were found to contain horsemeat.

## General Bacteriology

*Staphylococcus.* Staphylococcal infections have become a major problem in hospitals and this Laboratory has become actively concerned about these infections and their control. One of the keys to the control of infections spread through a community or hospital is the specific identification of the strains being spread. Bacteriophage typing offers the best means available of identifying strains of staphylococci. This laboratory is now equipped to offer a complete typing service for pathogenic staphylococci and has become the *National Reference Centre for Canada* for this kind of work. Sets of typing phages (20) and their propagating strains are distributed to those laboratories desiring to type their own isolates, and cultures are submitted to this laboratory for reference diagnosis.

There was a great increase in the interest of these infections in hospitals in Canada during the year, as a result of which, many more cultures (1,020) were received for typing than in the previous year (290). This increase in interest on the part of hospitals and the consequent work load in this laboratory seems to be steadily getting greater. D.V.A. hospitals are particularly interested in this problem and most (702) of the 1,020 cultures received came from D.V.A. hospitals; the provincial laboratories however, are also interested and this laboratory has either sent sets of typing phages or is receiving cultures for typing from most of them. Sets of phages and cultures were sent out during the year to the Saskatchewan, Alberta, P.E.I. and British Columbia public health laboratories, as well as to the Providence Hospital, Moose Jaw, and the Hospital for Sick Children, Toronto. The new type '81' discovered by this Laboratory two years ago was sent to four laboratories in the U.S. requesting it. This has become one of the commonest types in hospitals in Canada.

Another new phage, presently referred to as phage '52AV', was isolated and characterized. This was obtained by adaptation of phage '52A' to a new propagating strain, untypable by the classical phages. Its lytic spectrum was determined and a total of 281 strains of the various groups were tested with the phage at Routine test dilution. Of



these 67 (23.8%) were lysed by it. The phage is a typical group 1 phage, lysing one-third of the group 1 strains tested and none of groups 2, 3 or 4 strains tested. Six percent (6%) of untypable strains were typed by this phage. It is related to phage '81', lysing type '81' strains but the '52AV' strains are not lysed by phage '81'. It has proved to be the commonest strain in one of the D.V.A. hospitals. It is now being used daily in the routine typing to ascertain its usefulness before referring it to the International Reference Centre at Colindale, England.

This laboratory has worked in close collaboration with the D.V.A. in a study of staphylococcal infections and a report of one of these collaborative studies, showing the usefulness of phage typing in the control of staphylococcal infections acquired in hospital, is now being prepared for publication.

During the year, with the cooperation of the hospital staff, a start was made to investigate the control of staphylococcal infections in an Ottawa hospital. This was a collaborative effort between the sections of sanitary and general bacteriology. The purpose of this study is to investigate all the sources and means of spread of staphylococci throughout the hospital environment, with a view to revising methods so as to effectively check the transmission of these organisms. There are so many facets and ramifications of the problem that it will take many years to complete but the data should be of the greatest use to all hospitals.

The first phase of the study was concerned with the sanitation of the food service kitchens and the laundry. All food service facilities were inspected and 364 utensils used in the preparation and serving of food were examined bacteriologically; 78 percent of the utensils met a standard of not more than 100 bacteria per utensil, the standard usually accepted for commercial restaurants. It is questionable whether this standard is really acceptable for hospitals, where exposure to pathogens is likely to be higher and resistance to disease probably lower than in the general community. Many deficiencies were noted and a full report, with recommendations for improvement, was submitted to the hospital authorities. A preliminary report on the laundry and laundering processes has also been prepared. The study of the bacterial contamination of the air is necessarily an important phase of the investigation and considerable time was spent by a senior officer in studying various air-sampling machines and in devising an improved 'slit-sampler'. Progress in this investigation has been seriously impeded by the recent loss through resignation of the medical officer who had been assigned to the project.

Antibiotic sensitivity tests were carried out on 203 strains of staphylococci and 26 lots of 25 ml. each of a high titred, polyvalent phage were prepared, which it is proposed to try out clinically on localized staphylococcal infections.

*Streptococcus.* This laboratory serves as a national reference centre for the serological identification of haemolytic streptococci and during the year 79 cultures were referred to it for diagnosis. In July an outbreak of severe streptococcal sore throat occurred in a Montreal hospital among the nurses, internes and lay staff, in which 18 nurses were hospitalized. Twelve representative cultures from the outbreak were submitted for typing and all proved to be Group A, Type 9. The outbreak was quickly brought under control with penicillin and the source of the outbreak was never definitely proved. An outbreak of scarlet fever occurred in Stony Plain, Alberta but no *one* type seemed to be involved. Of 27 cultures received, one third were type 12 and one-third type 9. The association of type 12 haemolytic streptococcus with acute glomerulonephritis complicating streptococcal infections has led to an increased interest, on the part of clinicians, in the typing of strains. Knowledge of the type may greatly influence the medical treatment of the case. Another function of the laboratory's streptococcus service is to supply grouping sera to provincial public health and hospital laboratories. During the year, 614 ml. of this sera was distributed on request.



For some years, this laboratory has been collaborating with the Hospital for Sick Children, Toronto, in a long term study of rheumatic heart disease. This laboratory has been carrying out antistreptolysin O determinations on the sera of selected patients, as its part of the collaborative effort. One hundred and one (101) ASO determinations were done during the year in this investigation and 43 additional tests were carried out for other hospitals. Thirty-four (34) determinations of C-reactive protein were also performed on specimens submitted by hospitals.

*C. diphtheriae and other Organisms.* This laboratory receives a number of cultures of *C. diphtheriae* for serologic typing and other organisms for diagnosis which the referring laboratories have been unable to identify. During the year, 49 cultures of *C. diphtheriae* and 55 other cultures were received for diagnosis. These latter are nearly always 'problem' organisms and require considerable time and effort to identify.

*Stock Cultures.* This laboratory maintains an extensive collection of several thousand stock cultures. During the year 130 cultures of Enterobacteriaceae, 82 cultures of *Staphylococcus aureus*, 121 cultures of *Staphylococcus* phage and 31 cultures of haemolytic streptococci were distributed on request.

### Biochemical Research Laboratories

During the period from April 1, 1955 to March 31, 1956, studies on the nutrition of mammalian tissues cultivated *in vitro* have been continued and extended. At the same time, the program has been broadened considerably to include investigations on the metabolism of tissue culture. The correlation between these two avenues of approach has made it possible to gain some understanding of the over-all biochemical activity of the tissue cultures. In the course of this work, 360 new synthetic media have been devised and studies made on approximately 20,000 individual tissue cultures.

The pathway of metabolism of sulphur-containing amino acids has been investigated in some detail, since this laboratory's previous studies had shown that these compounds were essential for maintaining the survival of the cultures. These investigations have established that the sulphur metabolism of individual tissues is different from that of the whole animal and that the conventional pathway established for the whole animal and for bacteria does not apply to individual tissues. A series of publications on these findings is in press in the *Journal of Biological Chemistry*.

The use of paper chromatography has made it possible to analyse the synthetic media before and after their application to the cells. These studies have shown that certain amino acids are used up from the medium and that others accumulate in the medium. Correlation experiments, in which individual amino acids in turn were omitted from the medium, have shown which ones are essential to maintain cell life. A remarkable agreement has been found between these two types of experiments: the amino acids which disappear from the medium are generally found to be essential, while those which accumulate in the medium are either inert or somewhat harmful. From these experiments, it is now possible to state the amino acid requirements of our cultures and to improve the synthetic media by the omission of certain amino acids. These investigations would appear to provide a rational basis for the development of special synthetic media for individual cell types. Application of this approach to monkey kidney cultures is now in progress. During the course of these studies, new methods for the determination of homocysteine, phenylalanine and hydroxy proline have been devised. An extensive series of publications is in press.

In order to intensify the effect of individual nutritional factors on the tissue cultures, a new method of "nutritional depletion" has been devised. This is an application of bacteriological principles and consists simply of cultivating the tissues for an initial three to four days in a salt solution, without nutrient substances. After this treatment the cul-



tures show a very restricted growth area, but revive, grow and survive to a normal period when supplied with the synthetic medium. As a result of the depletion period however, the requirement for individual growth factors is greatly increased. In the case of co-enzyme A, the optimum effective level is increased one-thousandfold. This new technique is now being applied to investigations on the vitamin and co-enzyme requirement of the cultures.

The various investigations already mentioned have been carried out to a large extent with freshly-explanted tissues from the chick embryo. Application of these studies has been made to other types of tissue, such as the L strain of mouse tissue, the HeLa cell of human malignant origin, and the monkey kidney cells as used in poliomyelitis studies. Ascitic tumor cells have been investigated as a source of cultures of malignant cells. From these studies an investigation of the mouse tumor specificity of ascitic tumors and the effect of cold in altering specificity is in progress.

During the fiscal year, approximately 300 liters of medium 199 have been prepared and supplied to the Virus Section for safety testing of the poliomyelitis vaccine. This volume of medium would have cost over \$10,000, if purchased from commercial sources. In addition, medium M 150 and M 416 have been supplied each week to the Virus Section for the maintenance of special cell strains.

A collaborative project with the Clinical Chemistry Section on the nutritional requirements of *Treponema pallidum* has been continued. Approximately 50 new media have been prepared and used in this study. Some progress has been made in this project but further experiments are needed before definite statements can be made.

A collaborative project with the Biologics Control Section is devoted to the study of tissue culture techniques as applied to the measurement of *H. pertussis* antibodies. This project is in its initial stages.

A study of toxins and other products of *Staphylococcus aureus* which may influence the infection process with the species has been commenced. The preliminary studies have involved selection of strains which produce alpha- and delta-lysins in usable yield, development of suitable growth media, and investigation of the kinetics of hemolysis by alpha- and delta-lysins as a means of developing methods for analysis of these products. In addition, good evidence has been obtained that delta-lysin which is capable of hemolyzing human erythrocytes also possesses leukocidal activity and may be identical with the so-called leukocidin of this species of bacteria.

## Publications

1. Morgan, J. F., and Morton, H. J., Studies on the Sulfur Metabolism of Tissues cultivated in Vitro. I. A critical requirement for L-cystine. *J. Biol. Chem.*, 215: 539-545, August 1955.
2. Morgan, J. F., Campbell, M.E., and Morton, H. J., The Nutrition of Animal Tissues cultivated in Vitro. I. A Survey of Natural Materials as Supplements to Synthetic Medium 199. *J. Nat'l Cancer Inst.*, 16: 557-567, October, 1955.
3. Pasioka, A. E., and Morgan, J. F., The Detection of Homocysteine in Biological Systems. *Biochim et Biophys. Acta*, 18: 236-240, October 1955.
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5. Pasioka, A. E., and Morgan, J. F., The Identification of Phenylalanine on Paper Chromatograms. *Biochim et Biophys. Acta*. 19: 366-341, February, 1956.



6. Morgan, J. F., Morton, H. J., Campbell, M.E., and Guerin, L. F., The Nutrition of Animal Tissues Cultivated in Vitro. II. A comparison of various Synthetic Media. Accepted for publication in *Journal of the National Cancer Institute*.
7. Morgan, J. F., and Morton, H. J., Studies on the Sulfur Metabolism of Tissues Cultivated in Vitro. II. Optical Specificities and Interrelationships between Cystine and Methionine. Accepted for publication in *Journal of Biological Chemistry*.
8. Pasioka, A. E., and Morgan, J. F., The Quantitative Determination of Phenylalanine on Paper Chromatograms. Submitted to *Analytical Chemistry*.
9. Pasioka, A. E., and Morgan, J. F., The Specific Determination of Hydroxy-L-Proline in Biological Materials. Submitted to *Proceedings of the Society for Experimental Biology and Medicine*.

### Biologics Control Laboratories

The program followed by the Biologics Control Laboratories stems from the Laboratory of Hygiene's dual function of providing technical assistance and advice to the Director of the Food and Drug Directorate, and its role as a national public health laboratory. The greater emphasis of work is based on the first-mentioned responsibility and includes the routine control testing of select groups of drugs, research related to the development and improvement of a wide variety of tests required for the proper control of these drugs, and field studies to prove the value of the laboratory control tests. The field studies are also an aid in proving the value of certain of these drugs, i.e., vaccines, toxoids, etc., for humans, and determining the most advantageous method for their use.

Shortage of staff and inability to obtain replacements to fill vacancies of the existing establishment plagued the program and acted as a handicap throughout the year. Priority was given to the control work and every effort was made to maintain and even to increase the volume of control tests. But a number of research projects had to be curtailed and a number of others shelved.

### Routine Controls

The control of licensed parenteral drugs is dependent on two separate procedures—the inspection of manufacturing establishments to ensure they meet Canadian standards from the standpoint of plant cleanliness, manufacturing techniques, and qualifications of personnel; and second, the examination and testing of drug specimens picked up on the “market”.

The policy for plant inspection, to date, has been the annual inspection of licensed Canadian establishments and bi-annual inspection of foreign licencees. Experience has shown this procedure to be a very effective control weapon. As a result, the policy was extended and every effort will be made to carry out annual inspections of all licencees—domestic and foreign. Thirty establishments were inspected during the fiscal year, twenty-nine were found satisfactory and their licences were renewed; the licence of one manufacturer had to be cancelled.

Tests for bacterial sterility, safety identity and potency are carried out routinely on the drugs listed in Schedule D, part C, of the Canadian Food and Drugs Act. This includes all parenteral antibiotics and biological drugs such as vaccines, toxoids, antisera, etc. Tests for identity and potency are carried out on non-parenteral antibiotics. The magnitude of the task for controlling antibiotics will be appreciated when it is realized that there are 19 distinct antibiotics distributed in Canada at the present time, and the



majority are put up in combinations with other antibiotics and with other drugs. One company alone lists 55 separate antibiotic combinations in their catalogue.

Tests for bacterial sterility and, where it can be done, for pyrogens, are carried out on Schedule "C" parenteral drugs and on a multiplicity of non-licensed parenterals. To obtain wider coverage and more complete control of imported drugs, samples of all "parenterals" are taken at the port of entry and sent to the Laboratory of Hygiene for testing.

During the course of the fiscal year, 38 new drug submissions, related to antibiotics, were reviewed for the Director of the Food and Drug Directorate. Seven hundred and twenty-five lots of antibiotics were received and tested during this same period. This material represented all 19 antibiotics mentioned above, and consisted of more than 200 different preparations and formulations. A summary of tests performed on these samples is as follows:

Potency (various types of assay)	721
Sterility	38
Toxicities	21
Pyrogens	21
	<hr/>
Total	801

A total of 758 drug samples, other than antibiotics, were tested. A summary of these tests follows:

<i>Product</i>	<i>No. Tested</i>	<i>Tests</i>
Serum products (includes human albumin, sera & gamma globulin)	58	Sterility, pyrogens
Antitoxins	19	Potency, sterility, pyrogens
Toxins	13	Potency, sterility, identity
Toxoids	72	Potency, safety, identity
Vaccines *	87	Potency, sterility, safety, identity
Intravenous solutions	48	Sterility, pyrogens
Parenteral drugs (not included above)	140	Sterility, safety, pyrogens
Medical supplies (sterile bandages, sutures, etc.)	80	Sterility
Blood Transfusion Equipment (a service to Red Cross Blood Donor Service)	229	Pyrogens, sterility
Disinfectants	12	Phenol coefficients

In the course of this work, fluid tetanus toxoid from two manufacturers and fluid diphtheria toxoid prepared by one manufacturer were found to have low potency. All three manufacturers were placed on a release basis for these products.

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\* Includes 27 lots of polio vaccine tested for bacterial sterility, pyrogens, freedom from tuberculosis organisms or tuberculins, and total nitrogen.



## Research

Preliminary studies were initiated towards the development of better control methods for B.C.G. (anti-tuberculosis) vaccine and tuberculins. Tentative procedures have already been introduced.

Studies on the assay of pertussis vaccine using both the intracerebral and intranasal challenge routes were discontinued, and new approaches, using tissue culture techniques, are being explored. Attempts to determine the cause of wide variation in the response of the mouse to immunization with whooping cough (pertussis) vaccine led to the use of radio-active isotopes. An article on the methods developed has been sent to a scientific journal for publication and another, on the results obtained, is now under preparation.

Immunization studies in humans were continued, but at a reduced rate. One study in Montreal, using diphtheria, tetanus toxoid and pertussis vaccine, was completed and the results published in the *American Medical Association Journal*. A study on the value of prenatal immunization—immunizing the mothers against whooping cough during the last trimester of pregnancy—is in its third year and shows promise of yielding interesting results. The latter study is in co-operation with the public health authorities, City of Montreal Health Department and McGill University. A second study on prenatal immunization was started on Indians in Saskatchewan, in collaboration with medical officials of the department's Indian Health Services. An attempt to reduce infant mortality in the Indians of that province is being made. In this study, the mothers are being immunized against six diseases—diphtheria, tetanus, whooping cough, typhoid and paratyphoid A and B—in the last three months of pregnancy. It is too soon to tell how valuable this procedure will be.

An immunological status survey of Indians by measuring blood samples for antibodies to a number of diseases is soon to be completed. A similar study for Eskimos is still under way.

## Collaboration—W.H.O. and Other Countries

The Biologics Control Laboratories collaborate with W.H.O. in the testing of proposed International Standards for Erythromycin, Tetracycline, pyrogen extract, and diphtheria toxoid (adsorbed). Extensive tests were carried out on all of these and the results sent to the W.H.O. authorities.

This laboratory also collaborated with the British Medical Research Council in their attempt to establish a Viomycin Standard for the United Kingdom. Finally, a number of samples of tetanus toxoid were assayed for Iran in conjunction with their biologics control program.

## Other Duties

Two hundred and eighty-five lots of low potency antibiotic standard and 35 lots of high potency standard were provided to D.V.A. hospital laboratories, provincial public health laboratories, universities and research institutes to aid in controlling their antibiotic test procedures.

The library of anaerobic cultures, established last year, is being added to continually. Six cultures were sent out on request and identification of 19 cultures from hospital laboratories was carried out.

## CLINICAL LABORATORIES

### Clinical Chemistry

The first edition of a Manual of Clinical Chemistry for Hospital Laboratories has been completed. The material included in the manual has been selected only after inten-



sive studies in a pilot laboratory located in an Ottawa hospital. The manual has been written primarily for the medical technician in those hospital laboratories where expert advice is not readily available. The authors have tried to combine simplicity with a practical degree of accuracy and no detail has been considered too insignificant to include. It is hoped, of course, that it will be useful for the chemist and pathologist as well and that it will be of value for teaching purposes. The manual has been printed in loose-leaf form and will be revised and enlarged from time to time. It may be obtained, without charge, upon request.

Studies in methodology are being continued and it is hoped to add a number of procedures to the manual in the next year or two. Particular attention has been given to the determination of cholesterol, phosphatase, bilirubin, amylase, total protein, albumin, hemoglobin, total iron and carbon dioxide capacity.

The study of micro and ultra-micro techniques has been continued and comparisons with macro ones have been carried out for several of the more common determinations. The method for the micro determination of nonprotein nitrogen has been improved. It is now possible, with a total of .75 ml. of blood, to perform the following determinations: sodium, potassium, calcium, pH, protein, glucose, nonprotein nitrogen, urea, carbon dioxide content, chloride, hematocrit and oxygen content. These procedures are extremely useful in pediatrics and in other instances where it is difficult to obtain larger samples of blood. Intensive training in ultra-micro techniques has been given to a biochemist from one large hospital and a technician from another.

The periodic analysis of stored frozen serum specimens was continued in order to evaluate their usefulness as controls. Several similar commercial preparations were analyzed for various components.

Cyanmethemoglobin standards were received from the National Research Council, Ottawa, and their optical densities were measured at regular intervals in order to test their stability; this work is part of a scheme, instituted by the National Research Council, Washington, D.C., for the establishment and evaluation of a suitable stable hemoglobin standard.

Assistance was given in the preparation of the written examinations for the Biochemistry Specialists Certificate of the Canadian Society of Laboratory Technologists. Eight theses and examination papers submitted for this certificate were marked.

The laboratory suffered the loss of two chemists and due to the resulting serious shortage of staff a Refresher Course was cancelled and certain activities, such as evaluation studies of accuracy in hospital laboratories and the preparation and distribution of standards, had to be curtailed.

## Syphilis Serology

This division serves as a national reference laboratory for syphilis serology. Collaboration with the Directors of Provincial Public Health Laboratories has been continued in an effort to maintain a satisfactory and uniform performance of blood tests for syphilis. All standard antigens, amboceptor and complement used in provincial laboratories are prepared at the Laboratory of Hygiene. During the past year these reagents were distributed in the following quantities: Kahn sensitized antigen, 11,160 ml.; Kahn standard antigen, 8,970 ml.; VDRL flocculation antigen, 10,970 ml.; VDRL buffered saline, 24,300 ml.; Kolmer antigen, 2,180 ml.; amboceptor, 355 ml.; and dehydrated complement, 32,160 ml.

The results of the seventh serological survey, which were compiled during the year, indicate that uniformity of testing in the provincial laboratories is good.



For the past year the Laboratory has been participating in the National Serologic Evaluation Study of the United States. The referees in this annual survey are the author serologists of the various tests and it is thus an excellent opportunity to check the sensitivity of each of the procedures used in Canada.

A new treponemal antigen test, the *Treponema Pallidum* Complement Fixation (TPCF) test, has recently been developed and the senior officer visited the laboratory of origin to study the procedure. The antigen is an extract of the virulent causative agent of syphilis and it is used in a conventional complement fixation test. Specimens will be examined in this laboratory with both the TPI and TPCF tests and the results will be evaluated in the light of clinical information.

During the year, an intensive investigation of the survival of virulent *T. palladium* in various synthetic media was conducted in collaboration with the Biochemical Research division. In addition, certain practical problems related to the TPI test have been studied and it is hoped that some of the observations will be of use to any who are contemplating setting up a TPI unit. Positive control sera submitted by the World Health Organization have been examined at various time intervals. This year the TPI test was performed on 755 specimens received from various parts of Canada by arrangement with Provincial Laboratory Directors.

Studies on the development of a fully synthetic antigen for use in the blood tests for syphilis have been continued as a joint enterprise with Dr. Erich Baer of the Banting Institute. The components of cardiolipin antigen, which is now commonly used in diagnostic work, are the naturally-occurring cardiolipin, lecithin and cholesterol. Synthetic saturated and unsaturated lecithins, as well as a number of related compounds, have been used as substitutes for lecithin. No compound lacking the complete lecithin structure has been found to be satisfactory. Two synthetic compounds related in structure to cardiolipin have each shown some slight reactivity in antigen mixtures as cardiolipin substitutes. The results of these studies have been incorporated in a paper to be presented at the International Symposium on Venereal Diseases and the Treponematoses which is being held in Washington, D.C. (May 1956).

The senior officer of the division has continued to serve on two international committees: (a) Sub-Committee for the Development of Standard Serologic Methods of the American Public Health Association, (b) Expert Advisory Panel on Serology and Laboratory Aspects of the World Health Organization. As part of the activities in the latter group the Laboratory has been chosen to assist in the assay of international reference sera for syphilis.

### **Virus Laboratories**

During the first part of the fiscal year the Virus Laboratories were fully engaged in the poliomyelitis vaccine control, carried out in accordance with Canadian Food and Drug regulations. These control procedures included safety tests in more than 500 monkeys and in numerous tissue cultures. Twenty-five lots of commercially produced vaccine were submitted to this Department, nineteen of which passed the safety tests.

During the latter part of the year further lots of vaccine, produced under the new and stricter regulations were submitted to this Laboratory for safety and potency testing. With the new regulations larger samples of vaccine were tested in about double the number of animals and large numbers of tissue cultures were inoculated with samples of each lot of vaccine. The increased work load on the vaccine required employment and training of additional personnel.

The poliomyelitis diagnostic service was expanded during the year and over 200 specimens from human cases of poliomyelitis forwarded by provincial departments of



health were examined by tissue culture methods. Thirty-six strains of poliomyelitis virus were isolated and typed. Thirty of these isolations were obtained from 116 specimens submitted by Nova Scotia and the majority (83 per cent) were of type III, an unusually high rate. The average rate for type III for the period of 1947-54 was only about five per cent of all types of polio virus isolated in Canada. In course of attempts to isolate polio virus there were encountered 32 strains of unidentified cytopathogenic agents, the etiological significance of which is not known. The majority of these agents appeared in specimens which came from Nova Scotia and Prince Edward Island. Experiments with these strains indicate that differences in cytopathogenicity exist among them. About six strains of Coxsackie virus were isolated from the specimens submitted by the provincial laboratories.

The largest number of poliomyelitis virus strains (30 per cent) was isolated from children of the 1-4 years of age group. The 1-4 and 5-9 age groups together accounted for 50 per cent of the strains isolated. Thirteen of the children up to nine years were recorded as having been vaccinated against poliomyelitis several months previously. From none of these, however, was polio virus isolated, although Coxsackie strains were recovered from two children and unidentified cytopathogenic agents from three children.

During the fiscal year of 1955-56 a total of 791 sera were received from the provincial Departments of Health, the Departments of National Defence, Veterans Affairs, the Indian Health and the Immigration Medical Services; 2,825 serological tests were carried out with these specimens. A serological survey on about 500 Eskimos and Indians of the Northwest Territories was initiated during this year with the object of establishing the degree of immunity of these populations to Virus Influenza and Poliomyelitis.

During the year 712 samples of standardized viral antigens and antisera were distributed by the Virus Laboratories to the provincial Laboratories of Health for the routine diagnosis of viral infections in man.

Research is being conducted on the development of a new potency test for poliomyelitis vaccine employing guinea pigs as test animals. Samples of recent commercially-produced vaccines were inoculated into large numbers of guinea pigs and monkeys, and the seriological response of these animals is being compared in tissue culture neutralization tests. It is hoped that the test in guinea pigs will replace the more expensive and cumbersome test in monkeys being used at present in the governmental control of polio vaccines.

Attempts have been made to maintain cells of human origin in synthetic culture media with the object of establishing a tissue culture test for poliomyelitis vaccine which is more sensitive than the test in monkey kidney tissue culture now used in official control procedures on this vaccine. An adaption of human kidney cells to a synthetic medium has been successful and it is hoped that in the near future these cells can be tested for comparative susceptibility to various viral agents.

An investigation was conducted to develop methods for the concentration and purification of soluble diagnostic antigens to be used in the serodiagnosis of virus infections in man. A tenfold purification of the antigens and a corresponding increase in specificity has been achieved and the results were reported at the annual meeting of the Canadian Society of Microbiologists at Winnipeg in June.

A quantitative study was made of the factors influencing the preparation of viral vaccines when using formaldehyde. Optimal conditions in this process were defined and improved trial vaccines have successfully been prepared under these conditions. This work is being continued.

Another object of research was to seek new methods for the preparation of viral vaccines replacing formaldehyde by various inactivating reagents. One compound has



been found particularly suitable for this purpose and is being studied in detail. Trial vaccines tested to date suggest that destruction of viability of the vaccine without loss of antigenicity may be achieved by use of this reagent.

### Zoonoses Laboratories

The Zoonoses Laboratories continued throughout the year to provide a modicum of service to provincial and other laboratories despite a shortage of trained personnel and a lack of space in which to carry out the work. Proposed disease-locating surveys of Eastern Canada and certain other research projects which had been planned were held in abeyance in order that routine services already undertaken might be maintained.

The examination of ticks and other specimens for the two western provinces was carried on as in previous years, but on a reduced scale. Some 4,750 ticks, fleas and other ectoparasites, and 225 rodent tissue pools, (spleens, lymph nodes, etc.) were examined for evidence of Rocky Mountain spotted fever, Q fever, Colorado tick fever, Tularemia and bubonic plague.

As evidence of both Rocky Mountain spotted fever and Colorado tick fever, infection was found in wood ticks (*Dermacentor andersoni*) collected in the region of Banff National Park, in 1953 and 1954, and some concern regarding this was expressed by the departments concerned. Tick collecting was pursued again this year in that area and attempts made to confirm the previous findings. To insure, as much as possible, that infected specimens would not escape detection, guinea pig inoculation tests, repeated yolk sack passages and, on as many specimens as possible, complement fixation tests, were employed in the rickettsial studies and repeated mouse brain passages were used in the checks for Colorado tick fever virus.

Definitive isolations of spotted fever rickettsiae were not obtained, but evidence highly suggestive of low grade mildly infective or immunizing strains was found in 16 lots of ticks submitted from Alberta and in two lots received from British Columbia.

It is perplexing, but in none of the surveys carried out thus far in Western Canada, surveys in which many thousands of ticks have been examined, have investigators ever encountered strains of rickettsiae highly virulent for guinea pigs, such as are frequently seen in the United States, even though severe and sometimes fatal human infections are encountered in the areas from which the ticks were submitted.

No foci of Q fever, Tularemia or bubonic plague infection were uncovered this year.

Some 4,600 millilitres of standardized concentrated diagnostic antigens—*Brucella abortus*, *Br. melitensis*, *Br. suis*, *Pasteurella tularensis*, *Proteus vulgaris*, OX2, OX19 and OXK—sufficient to conduct approximately 128,000 diagnostic tests, were supplied to provincial and other laboratories.

During the year an intensive study was carried out, and a paper prepared for publication, on a time-saving method of preparing *Brucella abortus* ring test antigen by using neotetrazoleum chloride instead of hematoxylin for staining, and studies on methods of maintaining stock cultures of *Liptospira* and preparing antigens for serological tests were continued in so far as time and facilities permitted.

### Administration Section

The administration section is composed of several sub-sections which provide all auxiliary services necessary to the operation of the scientific units. These include, Media and Wash-up Rooms, Animal Breeding Colony, Test Animal Colonies, Stores, Workshop, Transport, Stenographic Pool and Building Maintenance.

Although the severe heat of the summer affected the total yield to a large extent, the animal breeding colony continued to operate at about the same production level as last year. Some experimental breeding has been done to determine the best means of maintaining a high level of production as well as to ascertain the proper amounts and types of food required. A system has been devised for feeding ascorbic acid in drinking water, to ensure that all animals obtained their proper requirements. The test animal room was used as an experimental unit as well as a stocking unit for rabbits and guinea pigs from the breeding colony.

The work load on the stores and workshop greatly increased, due to the expansion in operations both in the Virus building and other sections, and there was increased demand on all other administrative services. Media and preparation rooms provided all the necessary media for the laboratories as well as glass wash-up for a large proportion of the glassware used. Transportation continued to be important, due to the large number of animals and biological specimens requiring immediate distribution.



# INDIAN AND NORTHERN HEALTH SERVICES

## Development and Functions

Five milestones in the development of Indian Health Services were reached in 1955. Exactly two hundred years ago the Imperial Government appointed Sir William Johnstone, of the Mohawk Valley, New York, as the first Superintendent General of Indian Affairs. From this event may be traced the development of all branches of government now engaged in any phase of Indian administration both in Canada and the United States. Seventy-five years ago the Canadian Department of Indian Affairs was formed, and under its aegis were appointed the first part-time physicians to the Indians of Eastern Canada. Fifty years ago a Superintendency of Medical Services was set up within the Department of Indian Affairs. This early venture did not prove too successful but the golden jubilee of the first attempt to organize a medical program underlines the long-standing interest of Government in the health, as distinct from the general welfare, of the native population.

A most important date in the development of the Directorate was November 1, 1945. On that day the control and supervision of the administration of medical services for Indians and Eskimos was transferred to the Department of National Health and Welfare as Indian Health Services. The Directorate, as now set up, is just ten years old and, from the point of view of rapidity of expansion and widening of interests, these have been most fruitful years. The progress was climaxed in 1955 by the addition of a new wing to the Service. Northern Health Services came into being, and fused with its older partner to form the combined Directorate of Indian and Northern Health Services.

## INDIAN HEALTH SERVICES

To put the relationship between this Service and the Indian population of the country into its proper perspective it must first be emphasized that the Indian is not entitled by law to free medical care. It is the intention of the Government to help these people reach full social, economic and educational equality with their white neighbours and to assist them, if they choose, to become full partners in the Canadian community. However, they have not been made wards of the State, nor has the State even assumed the responsibility of providing free medical attention to all, irrespective of their legal status or ability to pay. On the other hand, the government votes a certain amount of money to be spent each year for the provision of basic health and treatment services to the Indians and Eskimos. This is done on humanitarian grounds, for the isolation of many of these people is such that even the most primitive facilities would not otherwise be available.

The Directorate functions primarily as a public health service and this basic service is provided to all Indian and Eskimo communities. By contract, the eligibility for medical care of any given individual is determined by three considerations. First, he must be an Indian within the meaning of the Indian Act. Next, he must be following the Indian way of life, which for practical purposes in most parts of the country means that he must be living on an Indian reserve or have been away from that reserve for a period of less than a year. Finally, it must be established that the individual is financially unable to arrange appropriate care for himself. If he is able, he is expected to do so.

At the latest census in 1954 the Indian population was shown to be 151,500 as compared with 136,500 in 1949. This represents an increase of 11 percent over the five year period—a rate appreciably in excess of the natural increase in the non-Indian



population. The death rate is somewhat higher than average; in 1954 the crude rate for all Canada was 8.2 per 1000 while that of the Indian was 9.8. The birthrate is much higher; again quoting the 1954 figures, which are the most recent available, the rate in Indians was 40.8 as compared with 28.4 in the non-Indian population. Projecting these rates into 1955 and making due allowance for approximately 1,000 Indians who are accepted each year for legal enfranchisement, the 1955 population is estimated at 154,000. The same influences are apparent in the Eskimo group whose population in 1955 was about 9,500.

Administration of all aspects of Indian Affairs other than health is the responsibility of the Department of Citizenship and Immigration while the Northern Administration and Lands Branch of the Department of Northern Affairs and National Resources has the same role in relation to the Eskimo.

## NORTHERN HEALTH SERVICES

Northern Health Services has a dual function. Basically it has the duty of carrying out all responsibilities of the federal government in the field of health in the Northwest Territories and the Yukon, except where it might be advisable for the armed forces to operate health facilities within military establishments. In addition, it is prepared to undertake certain of the responsibilities of the territorial governments, provided suitable agreements in respect of each Territory are made with the appropriate authorities.

It was recognized from the beginning that the first task lay in collecting facts in order to assess the needs of the various communities scattered across the huge mass of Northern Canada. This was begun by a series of surveys through the area, by increased liaison with the governments concerned and with the Department of Northern Affairs and National Resources. It was fully realized that the medical and public health standards of the Territories could best be raised by coming to know and understand the points of view of their citizens and by bringing to bear, on their behalf, the technical resources not only of Indian and Northern Health Services but of the Department as a whole.

During 1955 Northern Health Service personnel were in the thick of this slow process. In all spheres in which the activities of the two Services overlapped they acted as a single unit whose functioning was co-ordinated at all levels by a common Directorate. Hence, the remainder of this Report except where the context makes the distinction clear will make no attempt to describe their activities separately. To do so might imply a divergence of policy or of authority which did not in fact exist.

## FACILITIES AND STAFF

For administrative purposes the country has been divided into five Regions with headquarters at Vancouver, Edmonton, Regina, Winnipeg and Ottawa. Each is headed by a Medical Regional Superintendent who represents the Director and who is assisted in his planning by a nursing consultant and a senior administrative officer. In the three Regions whose territory extends North of provincial boundaries this team acts in a dual capacity, representing the interests of both Indian and Northern Health Services. All Regions are further subdivided into Zones, each of which is administered by a Medical Zone Superintendent. This officer frequently has his headquarters in one of the larger departmental hospitals and may be assisted by a team similar to that operating from the Regional office. Within each of these Zones is a variable number of field installations. When circumstances do not justify the establishment of a separate unit the native groups are cared for under arrangements made with local agencies. In the more isolated districts, where constant professional surveillance may be impossible to arrange, the network is rounded out by the help volunteered by scores of missionaries, teachers, traders and officers of all government departments who dispense simple drugs, provide such



first-aid assistance as lies within their abilities and act as sentries who contact the nearest administrative centre at the first sign of emergency.

### Services to Suit

Facilities of the Service are scattered across all Provinces and Territories and are tailored, as far as possible, to the needs of the groups they serve. Their functions and size vary widely. However, in the conviction that only through a progressive public health approach can the most urgent problems be met, the field program has been built around the Public Health Nurse. The typical unit from which she works consists of a dwelling and an office and is known as a Health Centre. From this centre she extends her influence into the lives of the people, teaching the fundamentals of good health habits and ensuring that modern protective procedures are employed. Most of these Health Centres are located in rural communities and some are extremely isolated. In addition, fourteen clinics are based on departmental hospitals. From there a team of one or two medical officers, assisted by one or more graduate nurses, provides a combined health and treatment program. Thirteen similar clinics are set up in centres of relatively high population density in various parts of the country. In all, 86 field units of one or other of the above types were in operation during 1955.

When provision is made for the care of less seriously ill patients by the addition of a few beds the field unit becomes known as a Nursing Station. It is usually staffed by a nurse, a nursing assistant and a fireman-labourer. These Nursing Stations are mainly located in remote districts and medical advice, when needed, may have to be obtained by radio. In emergency a physician is flown in or the patient evacuated by air. The amount of bed care required is so consistently high that preventive public health work has had to be somewhat curtailed, but progress has been made towards establishing a proper balance. One hundred and eighty-five beds in 40 such Nursing Stations were operated in 1955, and a breakdown of the work done is given in Table 12 at end of the Directorate's report.

Table 11 summarizes the distribution of all field facilities by type and by province, and in Table 13 is shown some of the professional staff needed to operate the program in all its aspects. It will be noted that the work of the physicians and nurses was supplemented by a team of ten Dental Surgeons who attempted to concentrate on prophylactic care and dental health education in the younger age groups.

### Hospital Care

The eighteen hospitals operated by the Directorate are almost exclusively in the West. The most easterly is that at Moose Factory, Ont., at the foot of James Bay, and the most westerly at Miller Bay near Prince Rupert, B.C. They vary in size from 20 to 500 beds and have a total rated capacity of 2,193 beds and 110 bassinets. The larger of these function primarily as sanatoria for the treatment of tuberculosis but even these, and to a greater extent the smaller hospitals, are equipped to serve as community general hospitals. Table 14 provides statistics of patient movement in each of these institutions during 1955. The figures refer to in-patients, by which is meant those who were receiving medical care and who were occupying patient beds. Out-patients, newborn children and persons awaiting transportation are, therefore, excluded. The table includes both general and tuberculosis patients, and combines both Indians and Eskimos. The average occupancy of the 2,193 beds was 87.7 percent and the professional establishment included 40 medical officers and 286 graduate nurses.

The total number of full-time staff employed by the Directorate was 1,722. Amongst these were 197 Indians and Eskimos. To supplement their efforts, and to ensure that even the most remote bands should have access to professional help, it was found neces-



sary to employ more than 60 part-time physicians and to receive accounts from more than 1,200 doctors and 120 dentists in all parts of the country. In addition, Indians and Eskimos were treated in over 600 non-Departmental hospitals, which accounted for more than one-half of the 1,747,884 patient days of care given under the auspices of the Directorate during the year.

Data on patients treated in hospital, whether departmental or non-departmental, are given in Table 15. This table is both a synopsis and a breakdown: it summarizes and combines information on each of the three principal elements—race, condition and type of hospital—which enter into the patient-movement statistics maintained by the Directorate. As indicated by this table, there were no mental patients in departmental institutions. Moreover, the British Columbia Health Insurance Services (B.C.H.I.S.) concern only General patients and only Indians, as there are no Eskimos in that province. In all categories the patient days of separations include not only those days accumulated by patients actually discharged but also those accumulated by patients who have died or been transferred; many of the individuals who contributed to the last group were still in hospital at the end of the year. Therefore, the average length of stay of persons discharged, particularly in the tuberculosis category, was somewhat greater than might be inferred from the table

It will be noted that there was a substantial increase in patient load. This was most marked in the General category, where 1,687 individuals were under treatment on January 1, 1956, as compared with 1,050 on the same date in 1955.

## FIELD ACTIVITIES

Reduced to its simplest terms the question which the Service is trying to answer is how to overcome the difficulties inherent in arranging a modern health service for 2,000 small groups, often isolated and sometimes primitive, scattered over half a continent. Under these circumstances a project undertaken after weeks of careful planning may have to be postponed because of a change in the wind or a premature thaw. An X-ray survey may be held up by a broken crankshaft. A relatively simple problem may prove difficult to solve if raised over the radio by a worried trader in an Arctic settlement. In many outposts field officers must possess, above all, the qualities of ingenuity and resourcefulness and may sometimes be called upon to face a degree of personal risk. By contrast, officers in the more settled parts of the country may be able to operate their units in much the same fashion as do their provincial counterparts.

The problem is further complicated by the comparatively high incidence of illness found amongst the native peoples. Most striking at first glance is the prevalence of those communicable diseases which always follow in the train of poor sanitation and inadequate housing. Of particular importance in this respect is gastroenteritis of infants, which still takes far too high a toll of Indian lives each year. Such conditions as tularaemia and hydatid disease, relatively uncommon in the non-Indian population, are well recognized amongst Indians. The Eskimos, in particular, appear to have a very low degree of resistance to the more common communicable diseases and their exposure for the first time to measles or pertussis may be followed by a severe epidemic, sometimes involving the entire settlement and attended by a high incidence of complications. Underlying these striking manifestations in some groups are such less obvious problems as inadequate nutrition. Most basic of all, many have to face the psychological difficulties which must be met by any population which is trying to span, in one lifetime, the cultural gap of centuries.

## EDUCATION AND IMMUNIZATION

With this background it was necessary to maintain an active program on many fronts during 1955. In all areas increasing emphasis was laid on health education. Many



visual aids were employed, including filmstrips prepared by the Department, supplemented by material borrowed from the National Film Board library. For the first time an intensive effort was made to bring this type of teaching to the Eskimo. However, it was realized that these aids alone would not achieve lasting results except inasmuch as they were used to supplement the type of continuing education provided by the public health nursing program. It was felt that the progress that could be expected in any community would be in direct proportion to the degree of confidence the people had in their nurse. Home visiting was stressed, and in many areas first aid and home nursing classes were held.

Two poster competitions were held in an attempt to stimulate the interest of the school children. The first dealt with tuberculosis control and was confined to the province of British Columbia; the other covered the remainder of the country and stressed the importance of good nutrition. In both cases prizes were given to the successful entrants.

An intensive immunization program was continued in all areas, using the triple diphtheria, pertussis and tetanus antigen. B.C.G. immunization was again encouraged and an attempt made to give this protection to every newborn Indian child. In those districts where the risk was thought to be high T.A.B. courses were given. A complicating factor in such campaigns is that many native groups can only be assembled at irregular intervals and it is sometimes impossible to complete the course that has been initiated. The protection of the Salk vaccine was made available to the Indians and Eskimos for the first time during 1955. Those Indians resident within provincial boundaries were included in the campaigns organized by the local authorities. The distribution of vaccine in the Northwest Territories was organized by the Directorate and a total of 2,700 doses was administered by officers of the Service to the Indians of this area and to the Eskimos in all three sectors of the Arctic.

Worthy of special mention amongst the many field activities during 1955 was the success achieved by the survey parties in the Eastern Arctic. Five separate teams were involved, each responsible for a certain sector of the coast. The "saturation" approach was attempted for the first time with striking results. This involved a closely coordinated, highly organized program for each settlement whereby the greatest amount of benefit could be obtained by the population in the short time available. Each member of the survey team had certain clearly specified duties. The success of the venture can be gauged by the fact that almost 80 percent of the total population from Northwest River, Labrador, to Craig Harbour, Ellesmere Island, was X-rayed, physically examined, immunized against diphtheria, pertussis, tetanus and poliomyelitis, and given a dental check-up.

The immunological studies commenced in 1954 in co-operation with the Laboratory of Hygiene were continued during 1955. Additional valuable information on Eskimos was gained from specimens obtained by the Arctic survey parties. The investigation on the incidence of carcinoma of the cervix amongst Indian women, also commenced during 1954, is still proceeding and by the end of 1955 almost 1,000 specimens had been examined.

## TUBERCULOSIS

### Deaths

For the past several years the outstanding highlight of this section of the Report has been the precipitous drop in Indian tuberculosis mortality. Official figures for 1955 are not yet available but early information indicates that the death rate will not be much lower than that recorded for 1954. This finding is not altogether unexpected; many of the deaths were in the older age groups and represented the postponed ending of lives prolonged by intensive treatment. A summary of the mortality rates over the past ten years is given in Table 16. It may also be of interest to note that in 1954, the last year



for which final figures have been received, tuberculosis had dropped to eighth place as a cause of Indian mortality. This contrasts with the position it held in the four previous years—first in 1950, second in 1951, third in 1952 and sixth in 1953.

### Case-finding

The most gratifying aspect of the anti-tuberculosis activities of the Directorate during 1955 was the increased coverage which was provided in the case-finding program. On field surveys alone a total of 86,652 X-rays were taken which represents an increase of 8,512 over the previous year. In addition, 11,635 plates of Indian and Eskimo school children were examined. These figures do not include the many thousands taken in hospitals, those referred by outside agencies or the examinations carried out on persons of non-native status. Much of this extra activity was undertaken in the far North. It is estimated that field and school surveys reached 70 percent of the total Eskimo population, and that this percentage was exceeded in the Eastern Arctic. New active cases in the Eskimo group numbered just over 400 giving the extremely high overall incidence of 6 percent. Practically every known active case has been evacuated and is now under treatment; hence a marked improvement in this figure should be noted within the next two or three years.

Allowing for duplication of plates, the 91,099 examinations of Indians on survey represents a coverage of about 50 percent of the total population. There was some variation in the incidence of new cases in different areas, but over all the figure averaged approximately one percent. On survey examinations alone, counting all groups, one active case of tuberculosis, either new or reactivated, is being turned up for every 54 patients examined. Data on selected aspects of the case-finding program is presented in Table 17.

### B.C.G. Vaccination

This phase of the work gathered further momentum in 1955. Six thousand, one hundred and twelve Indians were vaccinated for the first time and 693 repeat procedures were done. This represents an increase of over 1,000 as compared with the 1954 figures. From the point of view of long-term planning an important step was taken by having Doctor Armand Frappier, accompanied by Doctor Lise Davignon of the Institute of Hygiene and Microbiology of the University of Montreal, visit each of the Regions. Intensive courses in theory and technique were conducted at four centres for groups of field doctors and nurses.

### Hospital Activities

As may be seen in Table 15 over 1,000,000 days of patient care were given to tuberculous Indians and Eskimos during 1955. The average length of stay for those actually discharged has not yet been calculated, but it is estimated that the final figure will be well over 400 days.

There has been no fall-off in the patient load. On January 1, 1956, 2,982 tuberculous patients were under treatment as compared with 2,941 on January 1, 1955. However, it is encouraging that there is now little or no delay in getting an active case under treatment.

## EXTENSION OF SERVICES AND FACILITIES

### Staff

The Director of Indian and Northern Health Services was designated as Canadian member of the Executive Board of the World Health Organization and headed the Canadian delegation to the World Health Assembly in Mexico in 1955.



A senior medical administrative officer was appointed to the Directorate as consultant in Northern Health. Also on Northern Health strength, a medical zone superintendent was appointed for the MacKenzie and Yukon areas and a full-time physician and nurse established at Fort Smith, N.W.T. to co-operate with the Indian Health Service personnel already working there.

Significant advances were made in the sphere of public health nursing during 1955. Seven supervisory positions were set up and there was an increase of nine in the public health staff nursing establishment. Improvements were also effected on the administrative side. A senior administrative officer was appointed by the Eastern Regional office at Ottawa and trained hospital administrators commenced duties at three hospitals—Sioux Lookout, Ont.; Miller Bay, B.C.; and North Battleford, Sask. A Requirements Control Officer was appointed to Head Office to develop and introduce standards and scales of issue and to ensure economical supply to all units.

### **Professional Improvement**

Two medical officers were successful in obtaining the Diploma in Public Health during the year, and four nurses completed a course in Public Health nursing.

A Pembine-type conference, in which three hospitals presented a series of consecutive tuberculosis discharges from a predetermined and arbitrarily-selected date, was held by the Directorate at Brandon Sanatorium on June 12, 1955. This was the first time that such a meeting had been held on this scale in Canada. Twenty Departmental medical officers attended, and an equal number of guests, from seven provinces, were present.

On the administrative side, the Assistant Director attended a one month training course for senior government officers during the summer, and two field officers were enrolled in an extension course in hospital administration. In March, 1956 an Executive Development Course was held in Ottawa by the Directorate. Fifteen administrative officers from all regions attended the meetings, which lasted for three weeks. National and local conventions of medical, nursing and hospital organizations were attended by various officers, and some received short courses of extra training.

### **Facilities**

Further improvements were effected at Charles Camsell Hospital, Edmonton, and the workshops and garage were renovated at Norway House Hospital, Man. Six new nursing stations were set up at Fort Good Hope, N.W.T.; Split Lake, Man.; Pelican Narrows, Sask.; Sandy Lake, Ont.; Frobisher Bay, Eastern Arctic; and Goodfish Lake, Alta. Two new health centres were put into operation at Manowan, Que., and Fort Chipewyan, N.W.T.

### **CO-OPERATION WITH OTHER AGENCIES**

The extensive use made of local professional and treatment services has already been mentioned. In many areas provincial authorities have co-operated with the Service in case finding and other public health endeavours. A fine working relationship exists with other government departments operating in areas inhabited by Indians and Eskimos, and special tribute must be paid to the help repeatedly given by the Royal Canadian Mounted Police and the Royal Canadian Air Force. In all parts of the country, but particularly in the far North, the Directorate leans heavily on the goodwill of religious groups of all denominations and on the continuing assistance given by many trading and commercial concerns. Most intimate of all has been the association between officers of the Service and the administrators of Indian Affairs in the Department of Citizenship and Immigration and the administrators of Eskimo Affairs in the Department of Northern Affairs and National Resources. To both these agencies must be given the highest praise for their outstanding work on behalf of the native peoples.

TABLE 11  
(Indian and Northern Health Services)  
DEPARTMENTAL FACILITIES  
December 31, 1955

AREA	Registered Indians* and Eskimos†	Hospitals	Nursing Stations	Health Centres	Clinics
Maritimes.....	5,841	—	2	4	1
Quebec.....	19,836	—	5	14	1
Ontario.....	37,249	3	7	12	5
Manitoba.....	19,684	6	8	2	4
Saskatchewan.....	18,786	2	5	5	3
Alberta.....	15,767	4	6	4	4
British Columbia.....	31,086	3	—	11	6
Yukon and N.W.T.....	12,071	—	7	7	3
Labrador.....	1,117	—	—	—	—
TOTALS.....	163,500‡	18	40	59	27

\* 1954.

† 1951.

‡ Estimated for 1955.



TABLE 12  
(Indian and Northern Health Services)  
NURSING STATION ACTIVITIES  
CALENDAR YEAR 1955

PROVINCE	Number of Nursing Stations	Rated Bed Capacity	Patient Movement				Patient Days
			Admissions	Separations			
				Discharges	Transfers	Deaths	
Nova Scotia.....	1	4	19	15	7	.....	119
New Brunswick.....	1	6	66	55	8	1	315
Quebec.....	5	20	200	152	43	.....	1,341
Ontario.....	7	38	576	496	79	9	4,526
Manitoba.....	8	32	420	358	60	5	1,777
Saskatchewan.....	5	20	603	469	124	5	3,098
Alberta.....	6	37	625	570	47	6	4,350
Yukon and Northwest Territories.....	7	28	65	55	8	.....	451
TOTALS.....	40	185	2,574	2,170	376	26	15,977

TABLE 13  
(Indian and Northern Health Services)  
PROFESSIONAL POSITIONS  
AT JANUARY 1, 1956

PROVINCE	MEDICAL OFFICERS			GRADUATE NURSES			Dental Surgeons	Physicians Part-time	Administrative Officers
	Admin.	Hosp.	Field	Admin.	Hosp.	Field			
Maritimes.....	.....	.....	1	1	.....	5	1	8	.....
Quebec.....	1	.....	1	1	12	12	1	6	.....
Ontario.....	1	9	6	2	60	24	2	19	2
Manitoba.....	1	2	5	1	16	16	1	4	2
Saskatchewan.....	1	5	3	1	23	11	1	1	3
Alberta.....	1	13	5	1	91	13	2	2	3
British Columbia.....	1	11	7	1	96	20	1	21	4
N.W.T. and Y.T.....	1	.....	8	0	0	8	1	1	.....
Headquarters.....	5	.....	.....	1	.....	.....	.....	.....	3
TOTALS.....	12	40	36	9	286	109	10	62	17



TABLE 14  
(Indian and Northern Health Services)  
HOSPITAL ACTIVITIES  
CALENDAR YEAR 1955

PROVINCE	Hospital	RATED CAPACITY		Average No. of Beds Occupied	PATIENT MOVEMENT				Patient Days	
		Beds	Bass.		Admissions	SEPARATIONS		Deaths		
						Discharges				Transfers
{ ONTARIO.....	Lady Willingdon.....	44	10	29.6	850	816	21	22	10,804	
	Moose Factory.....	142	18	175.9	1,063	735	311	8	64,189	
	Sioux Lookout.....	70	8	63.2	795	686	65	15	23,066	
{ MANITOBA.....	*Brandon.....	240	16	244.9	192	169	26	7	89,387	
	*Clearwater Lake.....	150	4	148.3	207	152	68	3	54,131	
	*Dynevor.....	40	10	47.8	70	50	17	1	17,461	
	Fisher River.....	32	4	18.1	609	581	19	14	6,606	
	Fort Alexander.....	20	5	12.0	537	493	35	6	4,390	
	Norway House.....	34	4	38.0	709	678	38	10	13,865	
{ SASKATCHEWAN.....	Fort Qu'Appelle.....	112	6	108.9	702	680	23	10	39,742	
	North Battleford.....	55	6	54.6	1,273	1,194	54	23	19,934	
{ ALBERTA.....	Blackfoot.....	37	4	11.5	490	466	22	6	4,206	
	Blood.....	46	5	29.1	1,084	1,078	13	13	10,625	
	Charles Camsell.....	568	6	438.0	1,024	1,031	7	19	159,873	
	Hobbema.....	27	4	17.8	819	797	27	9	6,512	
{ BRITISH COLUMBIA.....	Coqualeetza.....	190	.....	148.0	371	255	68	3	54,036	
	Miller Bay.....	171	.....	143.4	178	186	34	6	52,353	
	Nanaimo.....	215	.....	194.3	210	163	50	6	70,938	
TOTALS.....	.....	2,193	110	1,923.6	11,183	10,210	898	181	702,118	

\* Operated for the Department by the Sanatorium Board of Manitoba.



TABLE 15

(Indian and Northern Health Services)

TOTAL PATIENT MOVEMENT

CALENDAR YEAR 1955

ANNUAL REPORT

	GENERAL									
	UNDER CARE		SEPARATIONS				In at End	DAYS OF CARE		
	In	Adm*	Tot.	Dis.	Tr.	Died	Tot.	P.D.	P.D.S.	
INDIAN										
Dept. Hosp. and N.S.....	446	11,373	11,819	10,535	609	175	11,319	186,746	165,856	
Non-Dept. Hosp.—excluding B.C.H.I.S. —B.C.H.I.S.....	526 †	19,643 †	20,169 †	18,597 †	309 †	220 †	19,126 †	242,934 90,622	230,399 †	
TOTAL INDIAN.....	972	31,016	31,988	29,132	918	395	30,445	520,302	396,255	
ESKIMO										
Dept. Hosp. and N.S.....	44	248	292	173	59	3	235	15,936	11,769	
Non-Dept. Hosp.....	34	519	553	440	26	.....	466	21,582	19,215	
TOTAL ESKIMO.....	78	767	845	613	85	3	701	37,518	30,984	
INDIAN AND ESKIMO										
Dept. Hosp. and N.S.....	490	11,621	12,111	10,708	668	178	11,554	202,682	177,625	
Non-Dept. Hosp.—excluding B.C.H.I.S. —B.C.H.I.S.....	560 †	20,162 †	20,722 †	19,037 †	335 †	220 †	19,592 †	264,516 90,622	249,614 †	
TOTAL INDIAN AND ESKIMO.....	1,050	31,783	32,833	29,745	1,003	398	31,146	557,820	427,239	

\* Includes Transfers In.

† Not Available.

TABLE 15 (Continued)  
(Indian and Northern Health Services)  
TOTAL PATIENT MOVEMENT  
CALENDAR YEAR 1955

TUBERCULOSIS										
	UNDER CARE			SEPARATIONS				In at End	DAYS OF CARE	
	In	Adm.*	Tot.	Dis.	Tr.	Died	Tot.		P.D.	P.D.S.
INDIAN Dept. Hosp. and N.S..... Non-Dept. Hosp..... TOTAL INDIAN.....	1,368 1,167	1,811 1,532	3,179 2,699	1,561 1,292	473 206	25 37	2,059 1,535	1,120 1,164	450,597 428,857	613,638 393,991
	2,535	3,343	5,878	2,853	679	62	3,594	2,284	879,454	1,007,629
ESKIMO Dept. Hosp. and N.S..... Non-Dept. Hosp..... TOTAL ESKIMO.....	158 248	325 625	483 873	111 276	133 125	4 9	248 410	235 463	64,816 118,520	65,157 93,317
	406	950	1,356	387	258	13	658	698	183,336	158,474
INDIAN AND ESKIMO Dept. Hosp. and N.S..... Non-Dept. Hosp..... TOTAL INDIAN AND ESKIMO.....	1,526 1,415	2,136 2,157	3,662 3,572	1,672 1,568	606 331	29 46	2,307 1,945	1,355 1,627	515,413 547,377	678,795 487,308
	2,941	4,293	7,234	3,240	937	75	4,252	2,982	1,062,790	1,166,103

\* Includes Transfers In.



TABLE 15 (Continued)  
(Indian and Northern Health Services)  
TOTAL PATIENT MOVEMENT  
CALENDAR YEAR 1955

M E N T A L									
UNDER CARE			SEPARATIONS				In at End	DAYS OF CARE	
In	Adm*	Tot.	Dis.	Tr.	Died	Tot.		P.D.	P.D.S.
INDIAN									
Dept. Hosp. and N.S.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Non-Dept. Hosp.....	140	470	92	4	21	117	353	123,346	91,365
TOTAL INDIAN.....	140	470	92	4	21	117	353	123,346	91,365
ESKIMO									
Dept. Hosp. and N.S.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Non-Dept. Hosp.....	3	13	1	.....	.....	1	12	3,888	10
TOTAL ESKIMO.....	3	13	1	.....	.....	1	12	3,888	10
INDIAN AND ESKIMO									
Dept. Hosp. and N.S.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Non-Dept. Hosp.....	143	483	93	4	21	118	365	127,234	91,375
TOTAL INDIAN AND ESKIMO.....	143	483	93	4	21	118	365	127,234	91,375

\* Includes Transfers In.

TABLE 15 (Concluded)  
(Indian and Northern Health Services)  
TOTAL PATIENT MOVEMENT  
CALENDAR YEAR 1955

GENERAL, T. B., AND MENTAL									
	UNDER CARE			SEPARATIONS			In at End	DAYS OF CARE	
	In	Adm*	Tot.	Dis.	Tr.	Died		P.D.	P.D.S.
INDIAN									
Dept. Hosp. and N.S.....	1,814	13,184	14,998	12,096	1,082	200	1,620	637,343	779,494
Non-Dept. Hosp.—excluding B.C.H.I.S. —B.C.H.I.S.....	2,023†	21,315†	23,338†	19,981†	519†	278†	2,560†	795,137	715,755†
TOTAL INDIAN.....	3,837	34,499	38,336	32,077	1,601	478	4,180	1,523,142	1,495,249
ESKIMO									
Dept. Hosp. and N.S.....	202	573	775	284	192	7	292	80,752	76,926
Non-Dept. Hosp.....	292	1,147	1,439	717	151	9	562	143,990	112,542
TOTAL ESKIMO.....	494	1,720	2,214	1,001	343	16	854	224,742	189,468
INDIAN AND ESKIMO									
Dept. Hosp. and N.S.....	2,016	13,757	15,773	12,380	1,274	207	1,912	718,095	856,420
Non-Dept. Hosp.—excluding B.C.H.I.S. —B.C.H.I.S.....	2,315†	22,462†	24,777†	20,698†	670†	287†	3,122†	939,127	828,297†
TOTAL INDIAN AND ESKIMO.....	4,331	36,219	40,550	33,078	1,944	494	5,034	1,747,884	1,684,717

\* Includes Transfers In.  
† Not Available.



TABLE 16  
(Indian and Northern Health Services)  
T. B. DEATH RATES PER 100,000 POPULATION

—	1946	1947	1948	1949†	1950	1951	1952	1953	1954	1955
All Canada.....	47.4	43.4	37.1	30.4	25.9	24.4	17.1	12.3	10.3	.....
Indian.....	579.1	549.1	488.5	399.6	298.8	262.2	167.5	100.3*	60.2	48.8‡
White.....	41.9	41.9	32.5	26.7	22.0	20.7	14.7	11.4	9.8	.....

\* For the first time includes those of Indian status only.  
† Includes Newfoundland.  
‡ Provisional.

TABLE 17  
(Indian and Northern Health Services)  
SELECTED ASPECTS OF TUBERCULOSIS CASE FINDING PROGRAM

CALENDAR YEAR 1955

	R E G I O N					
	Eastern	Central	Sask.	Foothills	Pacific	Total
<i>Native Population</i>						
A. Indian.....	50,202	30,214	18,750	21,807	30,585	151,558
B. Eskimo.....	5,200	1,832	.....	2,461	.....	9,493
<i>Number of X-Rays Taken on Field Surveys</i>						
A. Indian.....	16,206	18,604	12,610	15,285	17,135	79,840
B. Eskimo.....	4,166	1,131	.....	1,515	.....	6,812
C. Others.....	302	2,443	2,947	8,240	757	14,689
<i>Number of X-Rays Taken on School Surveys</i>						
A. Indians.....	2,440	2,498	2,111	4,210	Included	11,259
B. Eskimo.....	7	.....	.....	369	under field	376
C. Others.....	79	323	199	1,140	Surveys	1,741
<i>Number of Active Cases</i>						
A. Diagnosed for the first time.....	881	165	141	17	65	1,329
B. Previously known						
i. known to be active.....	243	16	327	2	.....	588
ii. Re-activation.....	85	75	26	24	.....	210
Number of Active cases discovered by means other than field and school surveys.....	204	73	(*)	140	86	503
Number of active cases discovered on Surveys hospitalized by January 1, 1956.....	651	185	(*)	93	132	1,061

(\*) Not Available.



## MEDICAL ADVISORY SERVICES

### CIVIL AVIATION MEDICINE DIVISION

The Division has continued to carry out its function of medical adviser to the government and associated agencies on problems related to the health, safety and comfort of air crew, ground crew and airline passengers. The rapid expansion of civil aviation in Canada has produced a corresponding increase in requests for advice. A considerable portion of this advice has been concerned with the administration of air regulations as applying to medical requirements for aviation personnel licensed by the Department of Transport. Medical examination reports and electrocardiograms received for review have increased from approximately 3,000 in 1945 to nearly 18,000 in 1955.

The policy of establishing a district medical officer on a part-time basis in each Department of Transport district office has proven its value in expediting issue and renewal of pilot licenses at the district level. Since many medical problems can be resolved at the district level with the assistance of the district medical officer, the liaison between the primary medical examiner and the Department of Transport has been improved.

Continuing attention to the revision of medical requirements for civil aviation personnel has been necessary. The problem of early rehabilitation of commercial pilots following illness or injury, the problem of the older but experienced commercial pilot with a partial disability, and internationally-acceptable standards of vision and hearing have been given careful consideration and discussed at length with medical specialists in the appropriate fields. When the current revision of the "Department of Transport Provisional Standards for Aviation Personnel" and the "Department of National Health and Welfare Handbook for Civil Aviation Medical Examiners" is complete, it is intended to combine the two publications as a "Manual for Civil Aviation Medical Examiners."

The current method of recording pilot medical examination information for statistical purposes is being discontinued. Following consultation with the Royal Canadian Air Force Institute of Aviation Medicine, the Department of Transport and the Research and Statistics Division of this Department, a punch card system has been devised whereby coding will be completed by this Division while punching and sorting will be handled by the Department of Transport.

Establishment of Regional Medical Consultant Boards has now been completed in five of the seven centres necessary. These Boards are particularly useful in the settlement of contentious cases of marginal physical disability as well as in the assessment of physical competence of aircrew concerned in aircraft accidents. With the increasing number of pilots in the older age groups, the need for careful and unbiased assessment becomes increasingly obvious.

The Division continues active in the promotion of education in aviation medicine for medical examiners. In co-operation with the Royal Canadian Air Force Institute of Aviation Medicine, it has been possible to sponsor special short courses on various important subjects related to both the safety and comfort of passengers as well as aircrew. District medical officers and medical examiners appointed by the Department of Transport attended these courses.

The International Civil Aviation Organization recently recommended that more research should be carried out by contracting States in the field of aviation medicine, with particular reference to research on hearing, vision, colour perception and aeronautical speech communication. Although the Division is not in a position to undertake primary research on its own responsibility, close liaison has been maintained with the National Research Council, the Defence Research Board, the Royal Canadian Air Force



Institute of the Department of National Defence and the Department of Transport in considering these subjects. There is, of course, free exchange of information between these agencies on subjects concerning civil air transportation. Considerable progress has been achieved in the facilitating of crash injury reporting, investigation of fatigue and reasonable hours of duty for commercial pilots and air traffic control personnel and the problems of air transportation of medical supplies or injured persons related to civil defence.

### CIVIL SERVICE HEALTH DIVISION

For the past nine years this Division has been assuming responsibility for providing an occupational health program to the federal public service. Just as any developing organization approaching its tenth year taxes the physical limitations of its original home and the energies and ingenuity of its founders, so too in the Civil Service Health Division the years have brought rapid expansion of service to government departments and their employees and the necessary increase of health units and nursing counsellors without any accompanying increase in administrative and clinical facilities and personnel. This calls for careful planning to make the most economical use of professional time and for the establishment of priorities of service which are least likely to curtail its quality and growth. After almost a decade of experience, the Division is now in a period of program appraisal, adaptation and accommodation to stretch its service to meet growing demands without sacrificing quality of service and the objectives and ideals with which it started.

Health units service is now extended to 25,900 federal government employees and their departments through 20 health units and two part-time units, whereas clinical and advisory services continue to be available to the total 32,600 government employees in Ottawa. Although the provision of direct service to employees is still limited to the Ottawa area, advisory service to departments with regard to their establishments throughout Canada and abroad has steadily increased.

Significant changes in government regulations have increased the responsibility of this division in the planning and implementation of new health provisions. These changes have had a direct effect on the variety and volume of clinical work conducted at the Health Centre. Routine medical examinations for permanent appointment were discontinued in 1954. However, the new Public Service Superannuation Act introduced several additional classes of medical examination, all of which had either to be done at the Health Centre or arranged for by this division utilizing the facilities of the Department of Veterans Affairs or private physicians. Examinations for contribution to the superannuation account in connection with the picking up of prior public service, examinations for extension of employment beyond the age of 65 and re-examination of employees granted an annuity or allowance under the Act in respect of disability previously incurred are examples of these new classes.

In October, 1955, the division extended its advisory services to the departments of Trade and Commerce and External Affairs. Where formerly foreign service officers and employees only were examined prior to and on returning from postings abroad, the division now is called upon to provide similar services to all dependents of foreign service personnel posted to unhealthy posts. Where such examinations cannot be provided in Ottawa, arrangements must be made outside Ottawa. This new medical plan for foreign service personnel and their dependents also includes provision for treatment for conditions attributable to the post abroad. All arrangements for treatment are made by the Health Centre, utilizing wherever possible the Department of Veterans Affairs outpatient clinics or hospitals.

Further, there has been an increasing demand by departments for examinations for special purposes: annual examinations for employees of Mines and Technical Surveys



proceeding on field work; periodic examinations for employees from the Bureau of Mines and other departments handling radioactive materials; pre-employment examinations where an estimate of physical capacity for the job is required; periodic health assessments for selected groups of senior administrative personnel; and ophthalmological examination of employees engaged in work demanding a high standard of visual efficiency. The special training in ophthalmology obtained by one of the medical officers is proving most useful in this latter phase of the work. The volume of immunizations carried out at the Health Centre has also steadily increased. Practically all persons proceeding abroad from Ottawa receive smallpox vaccination and in many cases inoculations against typhoid and paratyphoid fevers, cholera, yellow fever and occasionally typhus fever. All of these commitments have taxed to capacity the clinical facilities and staff of the Health Centre which during the past year has operated with one fewer than its normal complement of medical officers.

One of the primary functions of the division when it was created was to supervise the health of government employees through close co-operation and consultation with the nursing counsellors in the health units. They were to be the case-finders who would at all times have available to them medical advice and complete facilities for investigation of problem cases. Recently it has become increasingly difficult to meet this heavy demands of referrals.. Without additional staff and facilities the division will be forced to curtail some of the clinical load now being undertaken. This situation is causing much concern and interfering seriously with the continued fulfillment of this basic objective.

During the past year minor structural changes in the Health Centre made possible the return of the division psychologist who, for lack of space, has had his office in another building for several years. This provides closer association with the clinical staff, a factor of considerable importance in view of the increasing work load. The increasing number of referrals from External Affairs and other departments to assess posting fitness adds greatly to the responsibility and contribution of the psychologist and psychiatrist. Although only a relatively small percentage are considered unfit for posting, helpful recommendations and suggestions are made as to the type of posting that will best suit the different personalities. These interviews also afford an opportunity for personal and vocational direction that should increase their usefulness to the job.

There have been also an increasing number of requests from departments and from the Civil Service Commission for assessment of employee suitability for continued employment or re-employment of persons whose service has been marred by a combination of physical, emotional and mental factors. This increase is gratifying since it indicates that the efforts of the nursing counsellors and the clinical staff to interest and involve departments in a positive preventive approach to problems are gaining support. Appropriately, the more recent emphasis of the psychiatrist's program has also been to develop individual and small group discussions with personnel officers and administrators. These are similar to those he has been conducting with the nursing counsellors. Frequently he confers jointly with departmental officers and a health unit staff to discuss and advise regarding the contribution each can make towards the emotional health of employees, individually and collectively. He also uses this opportunity to encourage their use of the library of psychiatric articles, studies and reprints which he has made available in each health unit.

The efforts of the division staff toward employee rehabilitation through co-operative effort are not restricted to the public service but extend into the Ottawa community, of which the civil servant population forms such a large part. The professional staff are actively engaged in developing mutually helpful relationships with all of the local health and welfare agencies and in the planning for a co-ordinated, comprehensive community approach to rehabilitation. It is encouraging and exceedingly helpful in the Division's



work with the employees to note the recent developments in all local services but particularly in the areas of cancer treatment, mental health facilities, alcoholism research and treatment, visiting homemaker services and increased community interest in and programs for older citizens.

### Staff Education

In staff education this year most of the Division's personnel participated in studies and discussions regarding "Working Mothers". This subject was timely in view of the new legislation ensuring equal opportunity in the public service to women regardless of their marital status and the projected changes in maternity leave regulations. These discussions were stimulating and pointed up ways in which the resources of this division and the community can be mobilized most effectively to assist the working mother and to minimize the strain on family life.

Members of the division continued to contribute to educational groups and publications. In addition to aiding field students in medicine and public health nursing, the staff continued to participate in the counselling courses for personnel officers sponsored by the Civil Service Commission. The chief of the division also spoke to two courses held at Arnprior for administrative officers in the public service and participated in a panel discussion at the eastern regional conference of the Civil Service Assembly of the United States and Canada.

### Co-operative Projects

Close liaison and co-operation with other divisions and other departments have been maintained and the confidence of employees secured, enabling several fact-finding studies to be successfully completed. The findings of a survey on acute respiratory diseases have already been published in the December, 1955, issue of the Canadian Services Medical Journal, as has an article on the 'Mental Health Program for the Federal Civil Service'. Two projects were jointly undertaken with the Nutrition Division. One involved the review of breakfast habits of 10,000 employees. This revealed that approximately one-third eat an inadequate breakfast and other interesting data which has provided fresh material for the nursing counsellors' nutrition teaching; the other provided information about the difference in the weights of individuals weighed with and without clothing, which information is important to the new Canadian height and weight survey.

A more active campaign was carried out during the past year with regard to environmental hazards and poor working conditions and with the assistance of the Occupational Health Division a large number of improvements were effected. Appropriate first aid supplies were furnished and special arrangements for health services were made as necessary. Negotiations were also concluded for the co-operation of the City Health Department in inspecting regularly all cafeterias and canteens in government buildings in Ottawa. Adverse conditions will be reported to this division, and appropriate action will be taken for their correction. This division also facilitated arrangements between the Canadian Cancer Society and government departments whereby 2,500 employees participated in the educational program of the mobile Red Door during a three-day period last April. This was well received and is being made available again during the whole month of June, 1956.

### New Health Units

During the past year a small health unit was opened to extend part-time services to civilian employees of the Department of National Defence at Plouffe Park. A similar part-time service is being planned for Defence employees in the Metcalfe Building, and another health unit to provide full-time service to civilians at Rockcliffe Air Station.



is nearing completion. The Daly Building has now been re-occupied by various groups, and a health unit will shortly be opened on the main floor to serve this building and small nearby groups. Employees and their departments in the East Block of the Parliament Buildings have recently expressed anxiety about their lack of a health unit. Since there is no adequate space available, a temporary arrangement has been made for them to utilize the health unit in the Post Office, an arrangement which is not completely satisfactory because of the time and distance involved.

Generally the desire for health unit service has increased, and departments are showing gratifying interest in providing space that is adequate in amount and location. Among those definitely projected and for which plans have been submitted are the new Mines and Technical Surveys Building; the Science Service Building of the Department of Agriculture at the Dominion Experimental Farm; the second Veterans' Memorial Building; and in the new buildings for the Post Office and the Department of Public Works in the Riverside Drive area. With the trend toward de-centralization of government buildings into various outlying areas (e.g., Tunney's Pasture, Billings Bridge and Shirley Bay), the geographic distribution of the health units is changing; however, the major concentration will likely remain central for years and require the continuance of the central location of administrative and clinical facilities. The greater distances are time-consuming and add to the problems of administration and supervision.

Following are statistics dealing with activities during the past fiscal year in the Health Units and at the Health Centre. Appended, also, is a statement of Retirements from Service, according to disability, during 1955-6.

TABLE 18  
(Civil Service Health Division)  
HEALTH UNIT STATISTICS  
By Months, Fiscal Year 1955-1956

	Total	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Number of personnel under supervision.....		24,394	24,723	24,527	24,863	24,790	24,822	24,820	25,450	25,389	25,682	25,986	25,900
Number of Health Units in operation.....		20	20	20	20	20	20	20	20	20	20	20	20
Number of visits—													
Total.....	174,736	12,880	14,885	15,554	13,604	14,505	14,532	14,874	14,545	14,563	15,230	15,050	14,514
First visit.....	123,842	9,190	10,577	10,949	9,801	10,290	10,306	10,732	10,293	10,489	10,750	10,429	10,036
Repeat visit.....	50,894	3,690	4,308	4,605	3,803	4,215	4,226	4,142	4,252	4,074	4,480	4,621	4,478
Visits by sex—													
Total.....	174,736	12,880	14,885	15,554	13,604	14,505	14,532	14,874	14,545	14,563	15,230	15,050	14,514
Males.....	83,452	6,038	7,053	7,425	6,387	6,912	7,128	7,118	6,976	6,991	7,393	7,259	6,772
Females.....	91,284	6,842	7,832	8,129	7,217	7,593	7,404	7,756	7,569	7,572	7,837	7,791	7,742
Nature of visits—													
Total.....	174,736	12,880	14,885	15,554	13,604	14,505	14,532	14,874	14,545	14,563	15,230	15,050	14,514
Illness.....	74,910	5,448	6,280	6,677	6,034	6,366	6,205	6,223	6,095	6,031	6,493	6,678	6,380
Accident.....	15,850	1,114	1,597	1,561	1,436	1,383	1,315	1,264	1,260	1,296	1,194	1,212	1,218
Consultations.....	17,228	1,265	1,415	1,609	1,297	1,333	1,524	1,408	1,428	1,223	1,646	1,595	1,485
Return-to-work visits.....	66,748	5,053	5,593	5,707	4,837	5,423	5,488	5,979	5,762	6,013	5,897	5,565	5,431
Classification of first visits—													
Total.....	123,842	9,190	10,577	10,949	9,801	10,290	10,306	10,732	10,293	10,489	10,750	10,429	10,036
Respiratory.....	31,724	2,407	2,267	1,439	1,020	1,317	3,018	3,809	3,071	3,383	3,301	3,325	3,367
Digestive.....	20,467	1,458	1,686	2,198	2,361	2,592	1,607	1,284	1,504	1,576	1,640	1,345	1,216
Skin and cellular.....	8,961	603	908	1,032	1,134	935	648	579	598	711	604	614	595
Menstrual disorders.....	6,435	507	643	736	535	580	513	506	481	488	499	484	463
Emotional disorders.....	1,824	170	144	146	138	161	136	155	140	162	155	179	138
Contagious diseases.....	123	16	14	5	6	5	2	6	8	5	18	21	17
Accidents, non-industrial.....	6,668	483	676	679	652	610	474	503	551	537	492	508	503
Accidents, industrial.....	5,183	369	483	478	409	422	411	406	450	447	428	449	431
Ill-defined and all others.....	42,457	3,177	3,756	4,236	3,546	3,668	3,497	3,484	3,490	3,180	3,613	3,504	3,306
Disposal—													
Total.....	174,736	12,880	14,885	15,554	13,604	14,505	14,532	14,874	14,545	14,563	15,230	15,050	14,514
Sent home.....	4,515	376	353	387	334	334	400	447	358	333	361	417	415
Returned to work.....	170,221	12,504	14,532	15,167	13,270	14,171	14,132	14,427	14,187	14,230	14,869	14,633	14,099
Referrals—													
Total.....	12,097	931	1,021	1,146	929	1,118	1,025	1,092	1,124	801	1,043	981	886
Referred to Health Centre.....	2,613	229	224	255	169	225	194	216	275	175	274	218	159
Referred to family physician.....	8,546	636	715	790	697	816	745	788	751	558	692	696	662
Referred to community agencies.....	938	66	82	101	63	77	86	88	98	68	77	67	65

Index of Participation—  
Average monthly number of employee Health Unit  
visits per 100 personnel supervised.....58



TABLE 19  
(Civil Service Health Division)  
HEALTH CENTRE STATISTICS  
FISCAL YEAR 1955-1956

NUMBER OF VISITS		
Total.....		7,018
First Visit.....	3,019	
Repeat Visit.....	3,999	
VISITS BY SEX		
Total.....		7,018
Male.....	4,615	
Female.....	2,403	
ANALYSIS OF VISITS		
Physical Examinations.....		2,738
Pre-employment, periodic, P.S.S.A.....	427	
Foreign Service, isolated duty, postings, etc.....	406	
Referrals—voluntary, department, health unit, etc.....	1,905	
Consultations, Interviews, etc.....		4,130
Psychological.....	819	
Psychiatric.....	284	
Special — eye, X-ray, immunization.....	3,027	
Accidents.....		150
Industrial.....	10	
Non-Industrial.....	140	
IMMUNIZATIONS		
Total number of employees immunized.....		1,709
Total immunizations.....		2,423
Smallpox.....	722	
T.A.B.T.....	700	
T.A.B.....	301	
Cholera.....	217	
Typhus.....	45	
Yellow Fever.....	358	
Other.....	80	
DISPOSAL		
Total.....		7,018
Returned to work.....	6,953	
Sent Home.....	65	
REFERRED TO FAMILY PHYSICIAN.....		110
TOTAL LABORATORY PROCEDURES.....		4,655
X-RAY		
Total.....		4,884
Chest.....	2,193	
Chest (photo-roentgen unit).....	2,135	
Other.....	556	

TABLE 20  
(Civil Service Health Division)  
RETIREMENTS FROM SERVICE — ACCORDING TO DISABILITY  
FISCAL YEAR 1955-1956  
Male—181 Female—57 Total—238

Cause of Disability	AGE GROUPS					
	Under 40	40-44	45-49	50-54	55-59	Total
Infective and Parasitic.....	0	2	1	3	2	8
Neoplasms.....	1	1	4	2	10	18
Allergic, endocrine Metabolic, nutritional.....	0	1	0	1	7	9
Blood and Blood Forming.....	0	0	0	0	0	0
Mental psychoneurotic personality	7	4	8	9	14	42
Nervous systems and sense organs.	1	0	2	5	24	32
Circulatory.....	0	1	5	16	51	73
Respiratory.....	0	0	0	1	15	16
Digestive.....	2	1	2	1	7	13
Genito-urinary.....	0	0	1	0	1	2
Pregnancy, childbirth.....	0	0	0	0	0	0
Skin and Cellular.....	0	0	0	0	0	0
Bones and organs of movement....	0	0	1	1	15	17
Congenital Malformation.....	0	0	0	0	1	1
Symptoms and Ill defined.....	0	0	1	1	4	6
Accidents and results of old injuries	0	0	0	0	1	1
TOTAL.....	11	10	25	40	152	238

QUARANTINE, IMMIGRATION MEDICAL AND SICK MARINERS SERVICES

Introduction

The Quarantine, Immigration Medical and Sick Mariners Services administer a number of acts and statutory regulations dealing with the health aspects of international travel and immigration, the treatment of sick mariners and the diagnosis and treatment of leprosy. In addition, medical facilities and advice are made available to several government departments. Various periodic and special examinations are conducted for the Department of Transport which include those on marine, harbour and river pilots, special groups of employees destined to serve in remote areas and the examination of seamen in accordance with the Medical Examination of Seafarers Regulations, the latter service being provided through Order-in-Council P.C. 1955-667 dated May 5th, 1955.

Quarantine Service

The Quarantine Service administers the Quarantine Act and regulations and the Leprosy Act.

The six major quarantinable diseases are smallpox, plague, cholera, yellow fever, typhus and louse-borne relapsing fever. Canada's role under the International Sanitary Regulations requires that all travellers coming from countries other than the United States, Alaska, Greenland, Iceland, the islands of St. Pierre and Miquelon, Bermuda,



Cuba, Jamaica, the Bahamas, the Virgin Islands, Puerto Rico, the Panama Canal Zone or the Hawaiian Islands, shall furnish to the quarantine officer evidence that they are immune from smallpox by reason of, within the three years immediately preceding their arrival, either having had the disease or having been vaccinated against it.

Canada also co-operates in international measures to prevent plague by controls designed to guard against the port to port migration of rats. For Canadians who propose to visit areas of the world where yellow fever is prevalent, this Service maintains 15 centres across Canada where yellow fever inoculations are administered free of charge and during the past year 5,763 inoculations were administered and international certificates issued. The Royal Canadian Navy is now making use of these facilities and quarantine officers on both coasts are called upon to inoculate entire crews prior to naval training cruises to tropical areas where the danger of infection is present. At the chief east and west coast ports facilities are maintained to deal with persons and conveyances found to be infected with any disease or infested with vermin, and the proper facilities for the examination and sterilization of goods or things so infected or infested are kept always in a state of readiness.

Information concerning outbreaks of quarantinable diseases in most countries is gathered by the World Health Organization and transmitted to all member States for the application of any necessary and approved health measure. Routine weekly summaries go forth to all quarantine officers and information of vital importance is transmitted to them immediately it is received.

Of major concern is smallpox because of its highly infectious nature and quarantine officers are constantly on the alert in the enforcement of the Quarantine Regulations to ensure that all persons entering Canada, except those from countries mentioned in a preceding paragraph, have complied with the necessary requirements. It is estimated that approximately 675,000 persons are vaccinated or revaccinated annually for the purpose of international travel.

The number of vessels, crew members, passengers and other persons inspected at organized quarantine stations is shown in Tables 21 and 23 following. Local customs officers in their capacity as quarantine officers at unorganized ports, reported the entry of an additional 733 vessels.

The number of vessels inspected for vermin and rodents and results of such inspections are shown in Table 22 following.

Approximately 119,000 International Certificates of Inoculation and Vaccination were issued.

TABLE 21  
(Quarantine Service)  
SHIPS BOARDED BY QUARANTINE OFFICERS, 1955-1956

The following table indicates the number of ships boarded during the fiscal year 1955-1956, also total personnel on board, divided into their respective groups.

STATION	Vessels Inspected	PERSONNEL INSPECTED				Port Totals
		Crews	Passengers	Stowaways	Others	
Halifax, N.S.....	784	84,811	134,754	10	5	219,580
Saint John, N.B.....	381	17,182	2,859	.....	9	20,050
Quebec, P.Q.....	1,765	113,398	116,124	11	4	229,537
William Head, B.C.....	622	28,813	7,284	9	5	36,111
TOTALS.....	3,552	244,204	261,021	30	23	502,278



TABLE 22  
(Quarantine Service)  
CONTROL OF RATS ON VESSELS  
1955-1956

PORT	Vessels inspected, fumigated and deratization certificates issued	Vessels inspected and exemption certificates issued	Vessels inspected and remanded or time extended	Vessels inspected and certificates endorsed	Total Vessels inspected	Rodents Recovered	
						Rats	Mice
Halifax, N.S.....	4	45	84	1	134	.....	.....
Sydney, N.S.....	.....	10	.....	.....	10	.....	.....
Saint John, N.B.....	1	24	14	.....	39	.....	.....
Seven Islands, P.Q.....	.....	1	.....	.....	1	.....	.....
Quebec, P.Q.....	.....	11	.....	.....	11	.....	.....
Port Alfred, P.Q.....	.....	41	.....	.....	41	.....	.....
Three Rivers, P.Q.....	.....	3	.....	.....	3	.....	.....
Sorel, P.Q.....	.....	4	.....	.....	4	.....	.....
Montreal, P.Q.....	3	81	10	1	95	.....	33
Vancouver, B.C.....	11	96	54	237	398	35	.....
Victoria, B.C.....	.....	20	.....	93	113	.....	.....
Port Alberni, B.C.....	.....	4	.....	10	14	.....	.....
TOTALS.....	19	340	162	342	863	35	33

TABLE 23  
(Quarantine Service)  
INSPECTION OF AIRCRAFT SUBJECT TO QUARANTINE  
FISCAL YEAR 1955-1956

AIRPORT	No. of Aircraft	No. of Crew	No. of Passengers	Total Persons
Dorval, P.Q.....	1,276	10,954	46,097	57,051
Gander, Nfld.....	9,988	83,773	425,246	509,019
Goose Bay, Nfld.....	906	7,449	29,105	36,554
Malton, Ont.....	210	1,224	8,080	9,304
Moncton, N.B.....	121	1,083	5,035	6,118
Ottawa, Ont.....	7	72	209	281
Sea Island, B.C.....	574	3,506	19,399	22,905
Stephenville, Nfld.....	492	4,068	19,545	23,613
Sydney, N.S.....	408	3,619	16,946	20,565
Windsor, Ont.....	19	160	584	744
Winnipeg, Man.....	154	1,592	4,263	5,855
TOTALS.....	14,155	117,500	574,509	692,009

Leprosy

Canada operates two Leprosaria. Patients from Eastern Canada are hospitalized in a wing of the Hotel-Dieu de St. Joseph Hospital at Tracadie, N.B., and those from Western Canada are treated at Bentinck Island, B.C.

Five patients were under treatment at Tracadie at the beginning of the year and five at the year's end, there being no admissions or discharges during the year. Five patients were treated at Bentinck Island, four having been in hospital at the beginning of the year and one of Chinese origin being admitted during the year. Two patients, one case and one contact, were discharged as non-infectious and placed under medical supervision at home to carry on treatment so that a recurrence will be prevented.

The Hotel-Dieu de St. Joseph Hospital at Tracadie affords patients the maximum of comfort and recreation. Twelve single rooms are available and recreational facilities include a woodworking shop and outdoor activities on a tract of land bordering the Gulf of St. Lawrence.

On Bentinck Island the institution is operated on the cottage system and patients have the freedom of the Island. Ambulatory patients care for their own cottages and may have gardens and do their own cooking if they so desire. All patients are under the supervision of a graduate nurse and medical care is provided by medical officers of this Department from nearby William Head Quarantine Station.

As the following statistics indicate, leprosy is no longer one of Canada's important health problems although in the 19th century there were over one hundred cases in a certain localized area. Continued and full use is being made of sulfatrone drugs, which



have done much to brighten the prognosis of persons afflicted. However, because of the toxic properties of these drugs, it is necessary in the initial stages of the disease to have them administered in hospital. When, after a period of treatment, it is found that the infection is under control patients are permitted to return home to continue treatment under the supervision of the local health authorities. Statistics for 1955-56 follow.

TABLE 24  
(Quarantine Service)  
LEPROSARIA ANNUAL CENSUS  
1955-1956

	Tracadie N.B.	Bentinck Island B.C.
<i>Inpatients:</i>		
Remaining from last year.....	5	4*
Admitted during the year.....	0	1
Died during the year.....	0	0
Discharged during the year.....	0	2*
Remaining in hospital.....	5	3
<i>Outpatients:</i>		
Arrested — cases discharged from hospital, continuing treatment at home under medical supervision.....	3	5
Total known cases in Canada.....	8	8
	16	

\* 1 case (contact)

Immigration Medical Service

The Immigration Medical Service carries out or directs the preliminary medical examination of immigrants abroad; the final medical examination of immigrants, visitors and persons in transit, following arrival in Canada; the observation, clinical investigation and treatment of those who are found to be ill on arrival and the treatment of indigent immigrants who take ill following arrival while en route to their destination in Canada or while being accommodated pending placement in employment. Medical, diagnostic and treatment facilities are also provided for all persons accommodated or detained in immigration halls across Canada.

Preliminary medical prescreening is now carried out in the United States, the British Isles, the British West Indies, the Dutch West Indies, Mexico and Central America, various countries of South America, Australia, New Zealand, South Africa, North Africa, Lebanon, Israel, Iraq, the Dutch East Indies, Japan, Korea, South-east Asia, Spain, Czechoslovakia, Yugoslavia, Roumania, Poland, Hungary, Bulgaria, Iceland and the Azores. Medical reports from these countries are assessed in Ottawa, and the results are transmitted to the Immigration Branch of the Department of Citizenship and Immigration so that persons who are likely to be rejected on arrival at a Canadian port can be advised not to come forward. In addition, regularly-appointed roster doctors examine immigrants at Hong Kong, Karachi, New Delhi, Bombay and Calcutta.

Approximately 50 Canadian physicians were employed in Europe at offices located in the British Isles at London, Liverpool, Glasgow, Belfast and Dublin and in continental Europe at Paris, Brussels, The Hague, Copenhagen, Vienna, Rome, Athens, Karlsruhe, Hamburg, Munich, Hanover and Berlin. Assisting the Canadian medical officers in



Europe and working under their direction are roster doctors in the United Kingdom, Malta, Eire, Switzerland, Portugal, France, Norway, Sweden, Denmark and Finland.

The majority of immigrants now undergo complete medical examination before departure. This includes a chest X-ray and any specialized or laboratory examination that may be required. Final medical clearance is granted only after a final check following arrival in Canada.

Examinations and consultations by Canadian medical officers overseas and in Canada are free. Roster doctors and physicians doing medical prescreening and taking X-rays charge a fee for their services.

Many healthy immigrants come from countries having a high level of tuberculous infection and are more likely to develop tuberculosis than persons from countries with a low level of infection. The medical screening of immigrants has been so effective that the morbidity rate for tuberculosis in immigrants approximates the overall Canadian rate. When inactive cases of pulmonary tuberculosis are admitted, provincial departments of health are advised of the name and address so surveillance by local health authorities can be arranged.

Medical facilities for the examination of passengers arriving by ship are located at the following ports: St. John's, Nfld., Sydney, N.S., Halifax, N.S., Saint John, N.B., Port Alfred, Que., Quebec City, Que., Montreal, Que., Vancouver, B.C. and Victoria, B.C.

Medical facilities for the examination of passengers arriving by air are located at the following airports: Gander, Nfld., Stephenville, Nfld., Sydney, N.S., Moncton, N.B., Dorval, Que., Ottawa, Ont., Malton, Ont., Windsor, Ont., Winnipeg, Man. and Vancouver, B.C.

Department hospitals for the treatment of immigrants are located at Halifax, N.S., Saint John, N.B. and Quebec, Que. These hospitals are well equipped and provide up-to-date facilities for diagnosis, treatment and recreation for the patients

Departmental x-rays facilities are available at London, Liverpool, Glasgow and Paris overseas and at Halifax, N.S., and Quebec, Que., and Vancouver, B.C. in Canada.

Statistics relating to this Service follow.

TABLE 25  
(Immigration Medical Service)  
SUMMARY OF ACTIVITIES  
FISCAL YEAR 1955-1956

CANADA:	
Immigrants medically inspected on arrival at ocean and air ports.....	111,282
Non-immigrants medically inspected on arrival at ocean and air ports.....	34,205
Certified as "prohibited" under Immigration Act, Section 5, (a) and (b).....	61
Certified as physically defective, Section 5 (c).....	686
OVERSEAS—(United Kingdom, Continent of Europe and Orient)	
Prospective emigrants medically examined.....	131,199
Certified as "prohibited" under Immigration Act, Sec 5, (a) (b) and (i).....	2,415
Certified as physically defective, Section 5 (c).....	11,969
Re-examinations.....	27,795
United Kingdom:	
Prospective emigrants medically examined.....	50,470
Continent of Europe:	
Prospective emigrants medically examined.....	76,210
Orient:	
Prospective emigrants medically examined.....	4,519



(Table 25 continued)

## DETAILS OF EXAMINATIONS

## EXAMINATIONS OVERSEAS:

	Examinations	Re-examinations
By Canadian Medical Officers in British Isles.....	44,458	6,530
By Roster Doctors in British Isles.....	6,012	787
By Canadian Medical Officers on the Continent.....	72,209	19,868
By Roster Doctors on the Continent.....	4,001	539
By Roster Doctors in the Orient.....	4,519	71
Total — 1955-1956.....	131,199	27,795
Total — 1954-1955.....	153,556	31,585
<b>BRITISH ISLES:</b>		
Belfast by Canadian Medical Officers.....	2,851	772
Glasgow by Canadian Medical Officers.....	8,099	1,474
Liverpool by Canadian Medical Officers.....	9,414	1,632
London by Canadian Medical Officers.....	24,094	2,652
Belfast area by Roster Doctors.....	25	6
Dublin area by Roster Doctors.....	1,381	180
Eire area by Roster Doctors.....	258	40
Glasgow area by Roster Doctors.....	617	137
Liverpool area by Roster Doctors.....	1,784	193
London area by Roster Doctors.....	1,947	231
<b>CONTINENT:</b>		
Athens by Canadian Medical Officers.....	4,383	442
Berlin by Canadian Medical Officers.....	2,944	928
Bremen by Canadian Medical Officers.....	681	192
Brussels by Canadian Medical Officers.....	2,720	1,084
Copenhagen by Canadian Medical Officers.....	2,404	256
Hamburg by Canadian Medical Officers.....	2,706	587
Hanau by Canadian Medical Officers.....	1,501	329
Hannover by Canadian Medical Officers.....	7,700	1,832
Helsinki by Canadian Medical Officers.....	237	6
Karlsruhe by Canadian Medical Officers.....	7,035	1,757
Munich by Canadian Medical Officers.....	3,354	624
Near East by Canadian Medical Officers.....	331	0
Paris by Canadian Medical Officers.....	4,045	738
Portugal and Azores by Canadian Medical Officers.....	2,473	14
Rome by Canadian Medical Officers.....	18,341	8,488
The Hague by Canadian Medical Officers.....	7,115	1,227
Vienna by Canadian Medical Officers.....	4,239	1,364
Finland by Roster Doctors.....	647	109
Malta by Roster Doctors.....	308	142
Norway by Roster Doctors.....	928	115
Portugal by Roster Doctors.....	168	5
Sweden by Roster Doctors.....	607	106
Switzerland by Roster Doctors.....	1,343	62
<b>ORIENT:</b>		
Hong Kong by Roster Doctors.....	4,110	49
India by Roster Doctors.....	320	22
Pakistan by Roster Doctors.....	89	.....
Total.....	131,199	27,795

(Table 25 cont.)

DETAILS OF EXAMINATIONS

EXAMINATIONS IN CANADA:

	Immigrants	Non-Immigrants
Gander, Nfld.....	1,765	4,357
St. John's, Nfld.....	464	352
Halifax, N.S.....	29,301	1,502
Sydney, N.S.....	15	13
Saint John, N.B.....	1,652	157
Montreal, P.Q.....	1,807	763
Quebec, P.Q.....	44,795	11,472
Dorval, P.Q.....	5,097	8,247
Malton, Ont.....	2,558	1,508
Toronto, Ont.....	1,077	3
Fort Erie, Ont.....	4,619	730
Niagara Falls, Ont.....	3,259	455
Vancouver and Airport, B.C.....	3,840	1,991
Victoria, B.C.....	202	105
Others.....	10,831	2,550
Totals.....	111,282	34,205

TABLE 26

(Immigration Medical Service)

CASES PRESCREENED AT HEAD OFFICE

FISCAL YEAR 1955-1956

Chest Films interpreted.....	14,312
Medicolegal problems considered.....	352
Medical cases reviewed.....	15,635
Total cases dealt with.....	15,987



TABLE 27  
(Immigration Medical Service)  
CERTIFICATIONS UNDER SECTION 5 OF THE IMMIGRATION ACT  
FISCAL YEAR 1955-1956

	CANADA — Ocean and Air Ports	BRITISH ISLES		CONTINENT OF EUROPE		ORIENT	TOTAL
		Examined by Can. M.O's.	Examined by Roster Drs.	Examined by Can. M.O's.	Examined by Roster Drs.		
Certified under:							
SS (a) Mental Diseases and Defects.....	21	106	8	142	13	3	293
SS (b) Chronic Infectious Diseases.....	40	403	55	1,288	57	338	2,181
SS (c) Physical Defects.....	686	3,516	586	7,225	406	236	12,655
SS (i) Chronic Alcoholism.....		1		1			2
Total.....	747	4,026	649	8,656	476	577	15,131

### Sick Mariners Service

Operating under Part V of the Canada Shipping Act and being in existence since Confederation, the Sick Mariners Service has the distinction of being one of the oldest prepaid medical coverages in the country. It was originally devised to prevent foreign seamen who were ill on their arrival in Canada from becoming public charges after their ships had sailed but it was later extended to cover coastal and fishing vessels.

Free medical, surgical and hospital care is provided to crew members employed on vessels paying Sick Mariners dues, for all conditions for periods up to one year, with the exception of permanent insanity. The collection of Sick Mariners dues is made by the local collectors of customs from vessels arriving at ports in the provinces of Newfoundland, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, British Columbia, and those parts of Ontario and Manitoba which border on Hudson and James Bays. Payment of such dues is compulsory for all vessels arriving from foreign ports and from vessels which have made at least one voyage during the year in the interprovincial trade. Fishing vessels, however, are treated differently, inasmuch as the payment of dues is on a voluntary basis and the vessel so paying must be of Canadian registry, employed exclusively in fishing and makes the first payment of dues prior to the first fishing voyage in a calendar year. Applicable to all is the amount of dues fixed by the Act, which is two cents per net registered ton, and is payable each time a vessel enters port but not more than three times in a calendar year. The minimum payment, however, must be not less than two dollars.

Methods as simple as possible have been devised to enable a seaman to secure treatment. He merely applies to the captain of his ship, who completes a concise form showing certain particulars concerning the ship and the applicant. The application form is then signed by both the applicant and captain of the ship and presented to the local collector of customs who verifies the facts as stated, endorses the form and refers the sick or injured crew member to the nearest port physician. In cases of accident or emergency the seaman may be referred directly to the nearest hospital designated for the treatment of sick mariners and the port physician notified. Modern sick mariners clinics, staffed by medical Officers of the Department, are in operation at Sydney and Halifax, N.S., Saint John, N.B., Quebec and Montreal, Que., and Vancouver, B.C.

Port physicians employed on a part-time salary basis provide treatment at Lunenburg, North Sydney, Liverpool, Pictou, Digby and Yarmouth in Nova Scotia; Shippegan and Tracadie in New Brunswick; Port Alfred and Gaspé in Quebec; and at Victoria, Port Alberni and Powell River in British Columbia. In various other ports treatment is provided by designated physicians paid on a fee-for-service basis. A Marine Hospital is operated at Sydney, N.S., and, in addition to sick mariners, this hospital provides for admission and treatment for the Indians of the Eskasoni Indian Agency who are the responsibility of the Indian and Northern Health Services Directorate of this Department.

D.V.A. hospital facilities are being utilized in Halifax, N.S.; Saint John, N.B.; Quebec and Montreal, Que., and Vancouver, B.C. This arrangement has proven quite satisfactory.

The total number of hospitals in Canada authorized or appointed to treat sick mariners now stands at 157 and the number of port physicians, consultants and specialists employed during the year was 649.

Total dues collected during the calendar year 1955 was \$329,401.12. The total cost of treatment amounted to \$933,930.00. A total of 35,904 seamen received treatment for 60,293 diseases or injuries. Of this number 3,221 seamen were admitted to hospitals. The total number of crew members on vessels paying Sick Mariners dues was 117,110. Pulmonary tuberculosis cases discovered and treated amounted to 139, for an unadjusted rate of 119 per 100,000 persons. Tables relating to this Service follow.



TABLE 28

(Sick Mariners Service)

## STATEMENT OF DISEASES AND INJURIES TREATED

DURING THE FISCAL YEAR 1955-1956

DISEASE	CASES TREATED
Tuberculosis of respiratory system.....	100
Tuberculosis, other forms.....	39
Syphilis and its sequelae.....	2,443
Gonococcal infection.....	1,629
Dysentery, all forms.....	12
Other infective diseases commonly arising in intestinal tract.....	161
Certain diseases common among children: Scarlet Fever, Diphtheria, Whooping Cough, Measles and Mumps.....	55
Malaria.....	3
All other diseases classified as infective and parasitic.....	370
Malignant neoplasms, including neoplasms of lymphatic and haematopoietic tissues.....	43
Benign neoplasms and neoplasms of unspecified nature.....	597
Allergic disorders.....	1,162
Diseases of thyroid gland.....	1,161
Diabetes mellitus.....	176
Avitaminosis and other deficiency states.....	108
Anaemias.....	2,731
Psychoneuroses and psychoses.....	1,014
Vascular lesions affecting central nervous system.....	331
Diseases of eye.....	749
Diseases of ear and mastoid process.....	1,127
Rheumatic fever.....	122
Chronic rheumatic heart disease.....	116
Arteriosclerotic and degenerative heart disease.....	239
Hypertensive disease.....	739
Diseases of veins.....	2,189
Acute nasopharyngitis (Common cold).....	4,704
Acute pharyngitis and tonsillitis, and hypertrophy of tonsils and adenoids.....	1,718
Influenza.....	2,992
Pneumonia.....	1,211
Bronchitis.....	3,064
All other respiratory diseases.....	2,032
Diseases of stomach and duodenum, except cancer.....	3,475
Appendicitis.....	585
Hernia of abdominal cavity.....	1,649
Diarrhoea and enteritis.....	1,093
Diseases of gall-bladder and bile duct.....	882
Other diseases of digestive system.....	4,405
Nephritis and nephrosis.....	898
Diseases of male genital organs.....	1,622
Boils, abscesses, cellulitis and other skin infections.....	2,469
Other diseases of skin.....	1,961
Arthritis and rheumatism, except rheumatic fever.....	1,667
Diseases of bones and other organs of movement.....	592
Other specified and ill-defined diseases.....	621
Accidents, poisonings and violence (external cause).....	1,367
Occupational accidents and occupational poisonings.....	3,041
Accidents and poisonings not specified as occupational.....	829
	60,293

TABLE 29  
(Sick Mariners Service)  
Revenue, Expenditure and Deficit Classified  
According to Type of Vessel  
CALENDAR YEAR 1955

Classification of Vessel	Revenue		Expenditure		Deficit		Deficit Expressed as Percentage of Revenue
	\$	c.	\$	c.	\$	c.	%
Foreign-going.....	314,583.53		448,286.40		133,702.87		42
Coasting.....	3,506.98		28,017.90		24,510.92		642
Fishing.....	11,310.61		359,563.05		348,252.44		3079
Government (not paying S.M. Dues) Treatment provided under authority of P.C. 1955-4/483 dated March 31/55 T.B. 484135.....			96,194.79		96,194.79		
Additional expenditure not classified as to type of vessel.....			1,867.86		1,867.86		
TOTALS.....	329,401.12		933,930.00		604,528.88		184



# WELFARE BRANCH

## Introduction

The most significant welfare development of the year was the offer by the federal government to share with the provinces the cost of Unemployment Assistance. The question was placed on the agenda of the Federal-Provincial Preparatory Conference held in April, 1955; further discussions took place in May and June, following which a draft amendment was sent to the provinces in August. During the October Federal-Provincial Conference some modifications were agreed to and a final form of agreement later was sent to the provinces. Before the end of the fiscal year, five provinces—Newfoundland, Prince Edward Island, New Brunswick, Saskatchewan and British Columbia, had signed agreements which will entitle them to reimbursement once the necessary federal legislation has been passed. With the exception of that with New Brunswick, which is given effect from January 1, 1956, the agreements provide for an effective date of July 1, 1955, for the commencement of federal contributions.

Under the agreements the provinces and municipalities decide their own rates and conditions of assistance. The federal contribution to costs commences only when the case-count of those in receipt of assistance exceeds .45 per cent of the provincial population. In determining the case-count, both employables and unemployables are included but inmates of certain institutions and persons in receipt of certain statutory allowances (e.g., provincial mothers' allowances) are excluded from the claims. This new measure fills one of the remaining gaps in Canada's social security program.

The number of families receiving Family Allowances continued to increase as did the number of children on whose behalf they were paid. The tenth anniversary of the program brought favourable comments as to its effect on child health and welfare in Canada. As was expected, the number of recipients of Old Age Security also increased during the year.

The Blind Persons Act was amended as of June 28, 1955, to lower the eligible age from 21 to 18 and to raise the permissible income ceilings. Beneficiaries at the end of the fiscal year, however, numbered only 108 more than at the same time a year earlier.

Disability allowances came into effect in all ten provinces and the Northwest Territories. At the end of the first full fiscal year of operation there were 26,027 recipients.

The number of applications for old age assistance decreased during the fiscal year and at March 31, 1956 the number of recipients was 1,602 fewer than at March 31, 1955.

The Departmental Consultant on Fitness and Recreation supplied, on request, information on fitness, recreation, physical education, community centres and related subjects. While most of the departmental publications are available on a "for sale" basis from the Queen's Printer, a limited amount of free informational material was provided from the Department. Two departmental publications were revised for publication and distribution on a "for sale" basis, under the titles "Everyday Exercise" and "The Volunteer in Recreation". Consultation and editing services have been made available to the RCAF to assist in the preparation of pamphlets dealing with various sports in the RCAF sports series.

At the request of the Secretary of State, applications from welfare, recreation and sports organizations, for incorporation under the Federal Companies Act, were examined by the Welfare Branch.



The Excise Tax Act was amended in 1950 to provide for the exemption from sales tax of public institutions devoted to the care of children, the infirm, and the aged, if the institutions are certified by the Minister of National Health and Welfare as meeting the requirements of the Act. Fifteen institutions were certified during the fiscal year. This brings the total of institutions certified to 401. During the year, 350 Biennial Questionnaires were sent to institutions already certified, to determine their continued eligibility. As a result of information received from these and other sources the certification of 12 institutions was cancelled.

Research was begun on a study on child welfare reporting and statistics in Canada, which was undertaken at the request of the Canadian Welfare Council and the provincial directors of child welfare. Research work is continuing on legislation and welfare services for older people in Canada. Study was continued on income security problems. Studies for the United Nations have included a report on "Changes and Developments in Child Welfare 1953-55", and a statement on social work education in Canada. Studies released during the year included "Government Expenditures and Related Data on Health and Social Welfare, 1947-53", the English and French editions of the Summary of the Report of the Survey of Welfare Positions, the French editions of the main report of this survey and of the bulletin on Mothers' Allowances Legislation in Canada.

The Welfare Branch continued to make arrangements for the selection of candidates for the Queen Elizabeth Scholarships offered in Canada by the Eliot-Pearson School for Nursery School and Kindergarten Teaching, Tufts College, Medford, Massachusetts.

The Welfare Branch continued to arrange programs for those awarded social welfare fellowships and scholarships by the United Nations for study in Canada. There was one fellowship holder from Iraq and the scholarship holders came from the following countries; Bolivia, China (Taiwan) (2), Pakistan and the Virgin Islands.

The Executive Assistant to the Deputy Minister of Welfare, Mrs. D. B. Sinclair, was the Canadian representative to the United Nations Children's Fund (UNICEF). She attended meetings of the Program Committee and of the Executive Board in New York in September, 1955 and March, 1956. She represented the UNICEF Board at the General Assembly of the WHO in Mexico, in May, 1955.

The main Welfare Branch expenditures were:

	<i>Administration</i>	<i>Net Benefits</i>
Welfare Branch	46,901.88	
Family Allowances)	2,533,393.19	382,535,026.00
Old Age Security)		366,037,582.00
Old Age Assistance )		20,918,186.11
Blind Persons Allowance )	93,367.53	2,918,494.13
Disabled Persons Allowance )		5,665,066.65
Totals	<u>2,673,662.60</u>	<u>\$778,074,354.89</u>

## FAMILY ALLOWANCES AND OLD AGE SECURITY DIVISION

The year ended March 31, 1956 saw the tenth anniversary of the payment of Family Allowances in Canada. These allowances were first paid in the month of July, 1945. Since that date, more than \$3,000,000,000 have been paid in Family Allowances. There have been very definite indications of the effect the payment of Family Allowances has had on the health and welfare of Canada's children.



A report received during the past year from the Canadian Tuberculosis Association mentioned a visit made to a rather remote section of one of the provinces. It read in part, "The staff reports a steady improvement in the general health and nutrition, particularly in the children. It would appear that family allowances have made a great contribution to this section."

This year, as in other years, provincial educational authorities commented on the effect of Family Allowances on school attendance. The following extracts from letters or reports received from provincial authorities are illustrations:

"The payment of the family allowance by your Branch upon the condition that each child in respect of whom the payments are made must attend school regularly as required by the School Act (-----) is a highly effective influence with respect to regularity of school attendance in the Province. The payment of the allowances on this condition is a very important factor in bringing about the improved attendance which is reflected in the higher percentages of possible attendance recorded each year."

"On the whole I find that attendance is not the problem that it used to be some years ago. Before the introduction of family allowances the percentage of attendance for ----- was the lowest of all the provinces in Canada, but a great change was brought about in recent years."

Each year, the number of families receiving allowances grows, and thus expenditures increase. Similar growth is evident in the Old Age Security program, which was inaugurated in January, 1952. The past year has been primarily one of such expansion, with no major changes in either program, but with continuing development of policies and procedures. The increase in the number of Family Allowances accounts maintained at March 31, 1956, over that at March 31, 1955, was 68,322, the number growing from 2,208,235 to 2,276,567. In the case of Old Age Security, 779,569 pensioners were receiving payment at the end of 1955-56, as against 752,438 at the end of the previous fiscal year, an increase of 27,131. In neither case was the increase quite so great as in 1954-55 compared with 1953-54.

Certain amendments were made to the Old Age Security Regulations by Order-in-Council P.C. 1955-502 dated April 6, 1955. Perhaps the most interesting of these concerned qualification for the pension on the grounds of residence. Provision was made that, where an applicant was temporarily absent from Canada and was unable to return to Canada due to the dislocation of transportation facilities during or immediately following World War II, he shall be deemed to have continued to reside or to have been present in Canada for the period of absence between the date he made application for transportation to Canada and the date of his actual return. In addition, it was provided that periods of service outside Canada in Canada's armed forces, or those of an ally of Canada, during any war, may be considered as presence in Canada. It has been found that these provisions have been of considerable benefit to a number of applicants for the pension.

### Staff and Accommodation

There were 829 employees on the staff of the Division at March 31, 1956. This was a decrease of 7 from the year before. The problem of turn-over in staff remained a considerable one, particularly in the larger and more industrialized centres.

The shortage of professional social workers for the Welfare Sections of Regional Offices became more acute. At the end of the year there were vacancies for one senior social worker and eight junior social workers. It is hoped to make some progress in securing these trained workers, but the prospect is not too bright, in view of the shortage of social workers across Canada.



Accommodation occupied by Regional Offices was reasonably satisfactory, except in the case of the Toronto office, where the situation has become increasingly difficult. There is good reason to hope, however, that a solution to the problem of space in Toronto is near.

### Costs of Administration

The following is a comparison between the costs of administering the Family Allowances and Old Age Security programs in the fiscal years 1954-55 and 1955-56:

	Dept. of National Health & Welfare	Dept. of Finance (Treasury)	Dept. of Public Works	Totals
1954-55—	\$2,519,694.83	\$3,589,436.00	\$217,296.29	\$6,326,427.78
1955-56—	\$2,533,393.19	\$3,600,124.25	\$352,166.82	\$6,485,684.26

Total cost of administering the two programs in the past fiscal year was .86 per cent of the total expenditures of Family Allowances and Old Age Security.

### Welfare Services

The shortage of professional staff mentioned earlier had a severe effect on the work of the Welfare Sections. A total of six Regional Offices have been without one or more social workers during the past year. Under these circumstances, no new welfare projects could be undertaken. Rather, all efforts were bent on keeping abreast of current work.

The relationships established between Regional Offices and institutions and agencies continued to be strengthened. Every effort has been made to have workers of the Division continue their periodic visits to these agencies. One result of the close liaison with child caring agencies is indicated by the increased use being made of Family Allowances paid to these agencies. During the year more than \$2,000,000 in Family Allowances were paid to child caring agencies on behalf of some 44,000 children in their care. The policy of the department has been to encourage these agencies to use Family Allowances currently rather than to permit them to accumulate. Last year agencies spent on the average 98.8 per cent of the Family Allowances received. The department appreciates the co-operation of these busy social agencies in carrying out departmental policy.

In the field of Old Age Security, the Welfare Sections have continued to arrange for trustees to be appointed in cases where the pensioner is no longer able to handle his own affairs. The number of such trusteeships in effect remained about the same as for the previous year.

### Absences from Canada of Recipients

Family Allowances and Old Age Security are not payable on behalf of persons who are outside of Canada, even though their absence may be of a temporary nature. Depending upon the length of such an absence, retroactive payment may be made for all or part of the period of absence on the return of the child or pensioner to Canada. In both cases, Regulations require the reporting of absences from Canada in excess of one month to the Regional Director. The necessity for making these reports is drawn to the attention of recipients of allowances and pensions by letter when these are first paid, and periodically thereafter by means of notices enclosed with cheques.

Generally speaking, recipients of these benefits have made the necessary reports. On occasion, however, those in receipt of Family Allowances or Old Age Security have left Canada without giving the required notice of departure. The Auditor General's



Branch some time ago, in exploring this matter, felt that it would be useful to check ships' manifests available through the Department of Citizenship and Immigration. As a result of a fairly broad check of these records, it was possible to determine the names of a considerable number of recipients who had thus failed to meet their responsibility under the legislation. This checking appeared so useful that it has now been continued wholly by the staff of this Division.

Extracts from the manifests are made concerning arrivals in and departures from Canada of children under sixteen years of age and adults aged seventy or over. The checking of manifests going back over the last few years has been almost completed, and soon this will be done on a current basis. While it has been discovered that some beneficiaries have failed to notify this Division of absences from Canada, because of the short duration of most of these absences, the number of cases in which overpayments actually resulted has been relatively small. Efforts to acquaint recipients with their obligations in regard to reporting of absences have been continued and, in fact, intensified.

## FAMILY ALLOWANCES

### General

The following table shows an increase in the numbers of families and children benefitting from Family Allowances in March, 1956, as compared to the numbers in March, 1955.

	No. of Families	No. of Children	Expenditures
March, 1956	2,263,618	5,377,436	\$32,490,329
March, 1955	2,195,027	5,169,042	31,179,567
Increase	68,591	208,394	\$ 1,310,762

Total net payments for the fiscal year 1955-56 were \$382,535,026, an increase of \$16,069,062 over the preceding fiscal year. Tables 30 and 31 appended hereto give additional details regarding payments of allowances.

### Overpayments

Of the more than \$350,000,000 paid in Family Allowances each year, a small percentage must later be considered as improperly paid. These overpayments are caused by the fact that parents and children may become ineligible for allowances for several reasons and this ineligibility is not discovered by or reported to the Division until after certain payments have been made. Each year, then, there are overpayments, and these are added to those outstanding from all the payments made since the program came into operation. On the other hand, each year collections are made of both current and past overpayments. From year to year, the total of outstanding overpayments tends to become smaller.

At the end of March, 1956, overpayments outstanding totalled \$201,254.45. This compares with a total of \$324,336.54 reported as of March 31, 1955. It might be observed that the total of overpayments established since the beginning of Family Allowances in July, 1945, has been lessened (a) by collections, and (b) by deletions of those amounts considered uncollectable by Treasury Board. The \$201,254.45 represents, therefore, the balance outstanding as of March, 1956, of all these overpayments. Table 32 appended gives a breakdown by category of these outstanding overpayments.

### School Attendance and Employment

As was indicated earlier in this report, all information points to the excellent effect the payment of Family Allowances has had on school attendance. The number of chil-



dren who lost allowances for one month or more during 1955-56, because of not attending school regularly as required by the laws of the various provinces, was 8,664 almost the same number as in the previous year. There is evidence that reporting of such absences by school authorities has continued to improve. Since, in addition, the number of children of school age in Canada continues to increase each year, it is apparent that average school attendance also continues its upward trend.

In 1954-55, there were 16,221 children under sixteen years of age in respect of whom allowances were discontinued for one or more months because they were employed. In 1955-56, the number of these children rose to 19,730. This may reflect the booming economy and the extensive opportunities for employment even for young persons, or it may, in part, reflect more accurate reporting of employment of those under sixteen.

### Indians

The number of active Indian Family Allowances accounts held in Regional Offices at March 31, 1956, was 19,927, a decrease of 856 from the number maintained at the end of March, 1955. This decrease was due to the fact that members of a number of Indian Bands were affected by an amendment to the Family Allowances Regulations made towards the end of the year 1954-55. This amendment provided for dealing with the accounts of the Indians concerned in the same way as with those of other Canadian parents. Regional Offices now deal directly with these Indian parents, instead of through Indian Superintendents, as is done with the bulk of Indian accounts. On the whole, this procedure has worked out very well, though there are some exceptions. It is probable that recommendations will be made to have members of additional Indian Bands included amongst those to whom this procedure is extended.

### Eskimos

There was a slight increase during the year in the number of active Eskimo accounts maintained, from 1,680 at March 31, 1955, to 1,692 at March 31, 1956. Towards the end of the year, an agreement was reached to increase the number of Eskimo parents receiving payment by cheque rather than "in kind." The change will take effect in the first month of the new fiscal year. With the accelerated development of Northern Canada, it is expected that many Eskimos will reach more quickly than was anticipated the stage where they can be considered capable of receiving and expending cash payments of Family Allowances.

## OLD AGE SECURITY

### General

The number of pensioners who received payment of Old Age Security pensions in March, 1956, was 771,753, an increase of 26,133 over the number receiving pensions in March, 1955. Total net payments for March, 1956, were \$30,859,934, an increase of \$1,099,530 over the net payment for March, 1955. Total net payments for the fiscal year 1955-56 were \$366,037,582. Table 33 appended hereto gives more detailed statistics on payments of Old Age Security pensions.

### Overpayments

Overpayments of Old Age Security pension occur generally because of ineligibility for the pension due to comparatively long periods of absence from Canada which may be unreported or late reporting of deaths of pensioners. Usually such overpayments are recovered without too much difficulty. As is the case in Family Allowances, overpayments



which arise each year are added to those which have occurred since the inception of the program. Recoveries are made each year of current and past overpayments. Since January, 1952, when Old Age Security pensions were first paid, payments of more than \$1,450,000,000 have been made. At the end of March, 1956, outstanding overpayments totalled \$41,303.

### **Proof of Age**

Each year, the percentage of applications approved on the basis of Class A evidence of age increases. This was again true in the year 1955-56. Class A evidence, for Old Age Security purposes, consists of birth or baptismal certificates which meet certain standards. Only one item of Class A evidence is required. Where this primary evidence of age is not available, many other types of documents, known as Class B evidence, are given consideration. These include marriage, immigration, medical, military and census records, among others.

Where satisfactory Class A or Class B evidence cannot be obtained, Regional Directors may have recourse to a tribunal to consider the age of an applicant for the pension. Such a tribunal consists of a member appointed by the applicant, a member appointed by the Director and a chairman chosen by the two appointed members. It is a sort of citizens' committee, which conducts an informal hearing, interviewing the applicant and possibly witnesses, and considering what evidence of age or other relevant facts may be available. When an opinion as to the age of an applicant is given by a tribunal, it is binding on the Director, unless rebutting evidence is later obtained. During the past year, 488 tribunals were convened in Canada. In 343 cases, the decision was favourable to the applicant, and in the remaining 145 cases, unfavourable.

### **Indians and Eskimos**

Old Age Security pensions are paid to both Indians and Eskimos on the same basis as to the other residents of Canada. They are paid by cheque directly to these pensioners, except, as is the case with other recipients, when it has been established that a pensioner is incapable of managing his own affairs. While normally this Division may deal directly with Indian and Eskimo applicants for pension, all necessary assistance is given by the Indian Affairs Branch and the Department of Northern Affairs and National Resources.

It is again a pleasure to acknowledge the excellent support and co-operation received from all members of the staff of this Division and from the Chief Treasury Officer and his staff. These have made possible a year of further satisfactory expansion in the administration of Family Allowances and Old Age Security pensions.

TABLE 30  
(Family Allowances and Old Age Security)  
COMPARATIVE STATEMENT OF FAMILY ALLOWANCES PAYMENTS BETWEEN MONTH OF  
MARCH 1955 AND MONTH OF MARCH 1956

PROVINCE	Month of March 1955						Month of March 1956					
	Families Receiving		Children Receiving		Amount Paid		Families Receiving		Children Receiving		Amount Paid	
	Number	Average Allowance per Family	Number	Average Allowance per Child			Number	Average Allowance per Family	Number	Average Allowance per Child		
					\$	c.					\$	c.
Newfoundland.....	56,692	17.91	169,760	5.98	1,015,309		58,223	18.07	175,474	5.99	1,052,078	
Prince Edward Island.....	13,142	16.54	35,812	6.07	217,348		13,151	16.67	36,144	6.07	219,306	
Nova Scotia.....	97,478	14.84	238,896	6.05	1,446,635		99,071	14.97	244,551	6.07	1,483,479	
New Brunswick.....	76,229	16.68	210,640	6.03	1,271,421		77,079	16.88	214,966	6.05	1,301,302	
Quebec.....	605,916	16.27	1,624,055	6.07	9,860,313		623,961	16.36	1,675,840	6.09	10,207,564	
Ontario.....	744,736	12.68	1,574,703	6.00	9,446,468		773,535	12.87	1,657,561	6.00	9,952,726	
Manitoba.....	119,594	13.26	264,274	6.00	1,586,168		122,018	13.46	272,916	6.02	1,642,399	
Saskatchewan.....	126,424	13.92	290,359	6.06	1,760,280		127,175	14.10	296,027	6.06	1,793,634	
Alberta.....	161,737	13.39	361,551	5.99	2,166,135		167,705	13.57	380,095	5.99	2,275,725	
British Columbia.....	188,471	12.45	388,442	6.04	2,346,398		196,955	12.67	412,819	6.04	2,495,480	
Northwest Territories and Yukon.....	4,608	13.69	10,550	5.98	63,092		4,745	14.04	11,043	6.03	66,636	
NATIONAL.....	2,195,027	14.20	5,169,042	6.03	31,179,567		2,263,618	14.35	5,377,436	6.04	32,490,329	



TABLE 31

(Family Allowances and Old Age Security)  
NET FAMILY ALLOWANCES PAYMENTS  
(Comparison by Fiscal Years)

PROVINCE	1946-1947		1947-1948		1948-1949		1949-1950		1950-1951	
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Newfoundland.....										
Prince Edward Island.....	2,192,044.00		2,256,477.00		2,295,286.00		9,747,030.00		10,224,103.00	
Nova Scotia.....	13,358,417.07		14,207,957.82		14,515,131.00		2,411,291.00		2,467,257.00	
New Brunswick.....	11,394,426.02		12,086,891.93		12,462,093.00		15,291,614.07		15,660,003.27	
Quebec.....	82,389,966.72		87,157,243.46		89,304,108.45		13,375,434.33		13,708,198.00	
Ontario.....	70,325,914.70		77,328,534.50		80,151,249.69		95,901,763.15		99,558,247.04	
Manitoba.....	14,007,061.21		14,798,436.82		15,016,277.72		84,940,808.63		89,034,870.53	
Saskatchewan.....	18,119,791.87		18,561,329.55		18,527,408.22		15,668,695.50		16,235,519.56	
Alberta.....	17,159,488.00		18,181,662.50		18,695,325.00		18,953,599.79		19,237,070.80	
British Columbia.....	15,722,045.50		18,012,188.75		19,347,836.58		19,822,386.97		20,762,273.29	
Yukon and N.W.T.....	471,376.50		574,470.00		595,063.00		20,813,661.00		21,952,569.36	
NATIONAL.....	245,140,531.59		263,165,192.33		270,909,778.66		587,749.50		625,348.67	
							297,514,033.94		309,465,460.52	
—	1951-1952		1952-1953		1953-1954		1954-1955		1955-1956	
	\$	c.	\$	c.	\$	c.	\$	c.	\$	c.
Newfoundland.....	10,613,908.00		11,038,874.49		11,497,719.33		11,967,775.00		12,414,789.00	
Prince Edward Island.....	2,495,987.00		2,522,830.00		2,558,097.00		2,590,704.00		2,621,722.00	
Nova Scotia.....	15,949,540.73		16,297,169.95		16,716,374.00		17,147,920.00		17,596,684.40	
New Brunswick.....	13,892,907.00		14,287,535.05		14,700,819.00		15,073,324.00		15,451,544.00	
Quebec.....	102,883,811.56		107,084,124.36		111,441,301.49		116,057,182.00		120,389,837.92	
Ontario.....	93,207,144.30		98,303,868.20		104,409,819.41		110,492,480.00		116,604,314.27	
Manitoba.....	16,703,466.69		17,283,659.61		17,979,853.88		18,705,349.00		19,418,713.24	
Saskatchewan.....	19,424,561.76		19,723,352.42		20,244,540.00		20,894,790.00		21,401,114.00	
Alberta.....	21,573,429.99		22,575,583.60		23,958,080.50		25,390,585.00		26,752,793.00	
British Columbia.....	23,063,642.85		24,399,858.81		25,904,496.28		27,405,872.00		29,097,077.14	
Yukon and N.W.T.....	649,273.15		680,828.30		702,801.30		739,983.00		786,437.15	
NATIONAL.....	320,457,673.03		334,197,684.79		350,113,902.19		366,465,964.00		382,535,026.12	

TABLE 32  
(Family Allowances and Old Age Security)  
OVERPAYMENTS OF FAMILY ALLOWANCES  
March, 1956

(The overpayments may have occurred at any time between July 1, 1945 and March 31, 1956)

PROVINCE	Overpayments Recoverable by Deduction		Overpayments Recoverable by Collection		Overpayments Considered Uncollectable		Total Overpayments Outstanding	
	Number of Accounts	Amount	Number of Accounts	Amount	Number of Accounts	Amount	Number of Accounts	Amount
		\$ c.		\$ c.		\$ c.		\$ c.
Newfoundland.....	57	1,079.00	37	1,320.50	23	462.00	117	2,861.50
Prince Edward Island.....	29	783.00	4	84.00	3	32.00	36	899.00
Nova Scotia.....	86	2,904.00	100	3,717.00	32	578.25	218	7,199.25
New Brunswick.....	32	1,842.00	65	1,285.00	106	5,036.00	203	8,163.00
Quebec.....	497	22,463.39	844	51,903.94	473	35,121.10	1,814	109,488.43
Ontario.....	301	11,679.00	442	13,405.62	315	10,083.16	1,058	35,167.78
Manitoba.....	49	1,691.18	64	1,065.00	39	1,694.00	152	4,450.18
Saskatchewan.....	62	3,432.00	72	2,815.00	41	1,876.30	175	8,123.30
Alberta.....	136	3,724.00	119	3,243.00	49	2,959.50	304	9,926.50
British Columbia.....	104	4,962.00	59	1,626.29	121	4,767.65	284	11,355.94
Yukon and N.W.T.....	26	1,005.00	51	1,823.00	8	791.57	85	3,619.57
NATIONAL.....	1,379	55,564.57	1,857	82,288.35	1,210	63,401.53	4,446*	201,254.45

\*In addition to this amount outstanding, there has been deleted as uncollectable by Treasury Board authority between July, 1945 and March 31, 1956. a gross amount of \$136,394.52.



TABLE 33

(Family Allowances and Old Age Security)  
STATISTICS ON OLD AGE SECURITY

PROVINCE	Number of Pensioners in Pay March, 1955	Net Payment for March, 1955 only	Number of Pensioners in Pay March, 1956	Net Payment for March, 1956 only	Total Net Payment for Fiscal Year Ended March 31, 1955	Total Net Payment for Fiscal Year Ended March 31, 1956
		\$		\$	\$	\$
Newfoundland.....	15,693	626,282	15,973	637,271	7,459,680	7,597,278
Prince Edward Island.....	6,786	272,250	6,884	275,135	3,261,800	3,313,850
Nova Scotia.....	37,801	1,516,140	38,212	1,532,309	18,149,526	18,402,263
New Brunswick.....	27,014	1,085,756	27,513	1,103,493	12,945,905	13,239,262
Quebec.....	158,109	6,303,599	163,173	6,501,893	74,724,977	77,018,242
Ontario.....	274,680	10,974,305	283,171	11,307,362	130,296,095	134,623,020
Manitoba.....	44,591	1,787,098	46,396	1,854,783	21,051,155	21,945,850
Saskatchewan.....	44,821	1,801,890	47,101	1,893,122	21,202,779	22,323,671
Alberta.....	45,384	1,824,033	48,163	1,933,548	21,418,246	22,670,527
British Columbia.....	90,201	3,547,380	94,611	3,798,116	42,449,810	44,635,293
Yukon and N.W.T.....	540	21,671	556	22,902	245,360	268,326
NATIONAL.....	745,620	29,760,404	771,753	30,859,934	353,205,333	366,037,582

## OLD AGE ASSISTANCE, ALLOWANCES FOR BLIND PERSONS AND ALLOWANCES FOR DISABLED PERSONS

### OLD AGE ASSISTANCE

As old age assistance is one of several federal-provincial welfare plans, the federal part in its administration relates mainly to control over federal contributions to the provinces. This in turn involves a measure of control over the administration through the application of the provisions of the federal Act and regulations to decisions of the provincial authorities. The Old Age Assistance Division is responsible for federal administration.

There were no amendments during the fiscal year 1955-56 to the Old Age Assistance Act or to the regulations made under the Act. However, two rather minor changes in one of the sections of the regulations amended in the fiscal year 1954-55 made it necessary for the provinces and the territories to enter into supplemental agreements with the Government of Canada. The main agreements, completed shortly after the Act came into force on January 1, 1952, continued in operation throughout the fiscal year 1955-56, being modified only to the extent of the provisions of the supplemental agreements. The provisions, which were optional with each province, were that the provincial authority could, in calculating income, disregard supplemental allowances or cost-of-living allowances paid by a province to persons receiving disabled persons allowances and, under certain circumstances, the income value determined in accordance with the regulations from an amount up to \$500 of the cash surrender value of life insurance. The first provision would, of course, be applicable only to the spouse of a recipient of old age assistance.

The maximum amount of old age assistance to which the Government of Canada can contribute its share of fifty per cent is \$40 a month and this is the maximum amount paid in all provinces except Newfoundland, which pays \$30 a month. The Yukon Territory and the Northwest Territories pay \$40. The maximum amounts of income allowed are the same in all parts of Canada, \$720 a year in the case of an unmarried person, \$1200 a year in the case of a married person and \$1320 a year in the case of a married person with a blind spouse.

The age at which an applicant may qualify is sixty-five years and the residence requirement is twenty years in Canada immediately preceding the date of the proposed commencement of assistance. In certain circumstances the residence requirement is modified considerably by both the Act and the regulations.

There was little change in either the number of recipients or the federal expenditure as between the fiscal year 1955-56 and the fiscal year 1954-55. As at March 31, 1955, recipients numbered 94,625. As at March 31, 1956, the number was 93,023, a decrease of 1,602. The federal expenditure for 1954-55 was \$20,869,126.09 and for 1955-56 it was \$20,918,186.11 an increase of \$49,060.02. The comparison of the number of recipients is, of course, made at the end of the two fiscal years. With expenditure, the comparison is for the twelve months of both years. The number of recipients increased steadily during 1954-55 and decreased during 1955-56.

With a moderate increase from year to year in the estimated population sixty-five to sixty-nine years of age, it might be assumed that there would be a corresponding increase in the number of recipients. However, old age assistance is temporary, recipients being transferred to the federal administration of old age security on reaching the age of seventy years. So far transfers have shown a tendency to increase in each successive year. In the fiscal year 1955-56, 21,931 recipients were transferred to old age security. The number transferred since the inception of the Act up to March 31, 1956, was 75,140.



Undoubtedly the high level of employment also has an important bearing on the plan. The actual number of applications received by the provinces has been decreasing. This would indicate that fewer persons now find it necessary to request old age assistance than in the past few years.

Old Age Assistance statistics appear in tables at end of this Division's report.

## ALLOWANCES FOR BLIND PERSONS

As allowances for blind persons are paid under a federal-provincial plan the provinces have responsibility for dealing with applications and for the payment of allowances. Federal administration relates mainly to the payment of the federal share to the provinces, which indirectly has a bearing on provincial administration. The medical test for blindness is, however, entirely a federal matter, the Chief of the Blindness Control Division in the Health Branch of this Department being responsible for certifying in each case whether the applicant is blind within the meaning of the Blind Persons Act. The Old Age Assistance Division in the Welfare Branch is responsible for the financial part of federal administration.

The Blind Persons Act was amended as of June 28, 1955, to lower the age at which blind persons become eligible to receive allowances and to increase the maximum amounts of income allowed. The Act, as passed by Parliament in 1951, provided for the granting of allowances to persons who had attained the age of twenty-one years. The amending Act lowered the age to eighteen years. As regards the amounts of maximum income allowed, these were increased from \$840 to \$960 a year in the case of an unmarried person without a child or children, from \$1,040 to \$1,160 a year in the case of an unmarried person with a dependent child or children, from \$1,320 to \$1,560 a year in the case of a married person and from \$1,440 to \$1,680 a year in the case of a married person with a blind spouse.

The amendments to the Act required amendments to the agreements previously made by Canada with the provinces and the territories. For this purpose supplemental agreements were completed. The new agreements also dealt with the two items relating to income referred to in the preceding section, the same changes so far as those items were concerned having been made in the regulations under both the Blind Persons Act and the Old Age Assistance Act.

During the fiscal year the provinces and territories paid allowances for blind persons based on the maximum amount specified in the Blind Persons Act, namely, \$40 a month. The maximum amounts of income allowed were the amounts set forth in the Act although there were slight variations in the dates from which the increased amounts provided by the amending Act of 1955 were applied.

The residence requirement in the Blind Persons Act is ten years in Canada immediately preceding the date of the proposed commencement of the allowance. This general rule is modified in certain cases by added provisions in both the Act and the regulations.

The amendments to the Act in 1955 made it possible for a number of blind persons to qualify for allowances who had formerly been debarred on account of either age or income. However, the number of recipients as of March 31, 1956, showed little change, being 8,230 as compared with 8,122 as at March 31, 1955. There were 318 recipients of blindness allowances transferred to old age security. The number transferred in 1954-55 was 414.

Federal expenditure, which is seventy-five per cent of the total, was slightly higher in 1955-56. For the fiscal year 1954-55 it was \$2,886,184.15 and for 1955-56 it was \$2,918,494.13.



While the number of recipients as at March 31, 1956, was higher than as at March 31, 1955, the number of applications received in 1955-56 was actually less than in 1954-55. However, the percentage of approved cases was substantially higher.

Statistics relating to Blind Persons' Allowances are given in tables at end of this Division's report.

## ALLOWANCES FOR DISABLED PERSONS

While the Disabled Persons Act came into operation in the fiscal year 1954-55, the great majority of the original applications for allowances under the Act were considered by the provincial authorities within the fiscal year 1955-56. As at March 31, 1955, there were 7,166 recipients, most of these being persons transferred from a provincial plan previously in operation for some time in the Province of Ontario. As at March 31, 1956, there were 26,027 recipients. Federal expenditure for the fiscal year 1955-56 was \$5,665,066.65. The cost of disabled persons allowances is divided equally between the federal government and the provinces.

The agreements with the ten provinces continued in operation throughout the fiscal year 1955-56. Early in 1956 an agreement was completed between Canada and the Northwest Territories. This agreement, like others, specifies a maximum allowance of \$40 a month payable at the age of 18 years and the maximum amounts of income allowed as set forth in the federal Act. These are \$720 a year in the case of an unmarried person, \$1,200 a year in the case of a married person and \$1,320 a year in the case of a married person with a blind spouse. The residence requirement is 10 years in Canada prior to the date of the proposed commencement of the allowance. This period may be modified by other provisions in the Act and the regulations.

It is too early, as yet, to estimate the extent to which transfers to old age security will affect the number of recipients of disabled persons allowances. As the number in 1955-56 was only 14, it seems unlikely that, for some time at least, the number of recipients under the Disabled Persons Act will be reduced significantly by such transfers.

While the provinces have the responsibility of administering allowances for disabled persons, federal authorities take part in administering the medical features of the plan. The procedure generally followed is that the medical evidence for each applicant is considered by medical officers representing both the province and the federal government. The federal administration is divided between The Medical Rehabilitation and Disability Advisory Service Division in the Health Branch of this Department and the Old Age Assistance Division in the Welfare Branch. The former is responsible for the medical part of the plan and the latter for the financial part.

Disabled Person's Allowances statistics are included in Tables at the end of this Division's report.

## OLD AGE PENSIONS

Operations under the Old Age Pensions Act ceased as of December 31, 1951 and the Act was repealed on March 31, 1954. However, in each fiscal year since ordinary operations under the Act ceased there have been a few minor transactions. Additional expenditure has, for the most part, been in connection with uncashed cheques. The provinces have been receiving refunds and crediting the federal government with its share. During the fiscal year 1955-56, additional expenditure amounted to \$694.94 and the federal share of refunds received by the provinces amounted to \$11,081.65. There was, therefore, a reduction during 1955-56 of \$10,386.71 in the total expenditure from the inception of the Act.

As at March 31, 1956, federal payments from the inception of the Old Age Pensions Act for pensions other than those for blind persons amounted to \$810,916,509.93. Federal payments, including pensions for blind persons, amounted to \$836,844,964.68.



The amounts paid by the Government of Canada during the fiscal year 1955-56 for old age assistance and for allowances for blind persons and disabled persons, with relevant statistical information, will be found in tables 34 to 36, which follow.

TABLE 34

(Old Age Assistance)

NUMBER OF RECIPIENTS, AVERAGE MONTHLY ASSISTANCE AND TOTAL FEDERAL PAYMENTS, UNDER THE OLD AGE ASSISTANCE ACT, BY PROVINCES

For The Fiscal Year 1955-1956

PROVINCE	Number of Recipients	Average Monthly Assistance	Federal Payments 1955-1956
	Mar. 31, 1956	Mar. 1956	
Alberta.....	5,521	\$36.16	\$ 1,240,451.68
British Columbia.....	7,441	37.68	1,788,308.64
Manitoba.....	4,652	37.84	1,111,603.66
New Brunswick.....	5,891	36.86	1,303,188.68
Newfoundland.....	4,848	29.42	877,212.91
Nova Scotia.....	5,081	33.73	1,046,927.35
Ontario.....	21,731	36.90	4,918,977.94
Prince Edward Island.....	600	27.69	99,659.66
Quebec.....	32,227	37.51	7,357,373.13
Saskatchewan.....	4,925	37.05	1,150,402.27
Northwest Territories.....	86	37.93	21,000.19
Yukon Territory.....	20	40.00	3,080.00
Total.....	93,023	.....	20,918,186.11

TABLE 35

(Blind Persons' Allowances)

NUMBER OF RECIPIENTS, AVERAGE MONTHLY ALLOWANCE, AND TOTAL FEDERAL PAYMENTS, UNDER THE BLIND PERSONS ACT, BY PROVINCES

For The Fiscal Year 1955-1956

PROVINCE	Number of Recipients	Average Monthly Allowance	Federal Payments 1955-1956
	Mar. 31, 1956	Mar. 1956	
Alberta.....	415	\$38.54	\$ 145,706.99
British Columbia.....	475	39.52	166,771.68
Manitoba.....	411	39.60	145,547.11
New Brunswick.....	717	39.50	258,432.17
Newfoundland.....	353	39.65	126,037.93
Nova Scotia.....	726	39.55	254,603.63
Ontario.....	1,719	39.35	609,974.15
Prince Edward Island.....	96	37.52	32,279.27
Quebec.....	2,905	39.44	1,036,242.60
Saskatchewan.....	389	38.84	135,218.60
Northwest Territories.....	18	40.00	6,330.00
Yukon Territory.....	6	40.00	1,350.00
Total.....	8,230	.....	\$2,918,494.13

TABLE 36

(Disabled Persons' Allowances)

NUMBER OF RECIPIENTS, AVERAGE MONTHLY ALLOWANCE, AND TOTAL  
FEDERAL PAYMENTS, UNDER THE DISABLED PERSONS ACT, BY PROVINCES  
For The Fiscal Year 1955-1956

PROVINCE	Number of Recipients	Average Monthly Allowance	Federal Payments 1955-1956
	Mar. 31, 1956	Mar. 1956	
Alberta.....	1,150	\$38.01	\$ 290,947.36
British Columbia.....	705	39.00	115,520.91
Manitoba.....	738	39.00	172,349.71
New Brunswick.....	947	39.13	218,643.94
Newfoundland.....	606	39.08	119,325.53
Nova Scotia.....	1,172	34.86	254,325.87
Ontario.....	7,501	39.24	1,712,425.98
Prince Edward Island.....	292	32.84	56,702.54
Quebec.....	12,128	38.81	2,561,940.99
Saskatchewan.....	788	38.20	162,883.82
TOTAL.....	26,027	.....	\$5,665,066.65



# CIVIL DEFENCE

## General

The function of Civil Defence is to minimize the effects of disaster upon the population of Canada and upon the property of the Canadian people; to take measures to reduce loss of life, and to provide medical, welfare and other assistance to the civilian population. To carry out a program of such magnitude requires the strength and resources of the entire nation and necessitates a division of responsibility between federal, provincial and municipal governments.

Civil Defence, in its very essence, is the assurance of the maintenance of normal community services and for this reason the main operational responsibility, apart from overall plans, training and coordination, must fall on those local municipal agencies who carry the day-to-day responsibilities of maintaining the normal amenities of life in Canada's urban communities.

Since Civil Defence must centre on local organization and action, the role of the federal government is largely that of a guiding, directing and co-ordinating agency whose job it is to ensure that adequate planning and organization is maintained on provincial and local levels, that key personnel and instructors are trained in the various specialized fields, and that sufficient supplies of key materials and equipment, required exclusively for civil defence purposes, are made available on the operational level.

To this end, federal civil defence authorities continued to press forward during the fiscal year 1955-56. The tempo of training key civil defence instructors and others was stepped up. The Financial Assistance Program was implemented to a greater degree than heretofore. All Services continued to develop organizational, functional and operational plans essential in the event of a national disaster. Continued assistance was given to provinces and communities in establishing their Civil Defence Welfare and Health Services organizations. Considerable progress was made during the year with respect to warning and communications services and to evacuation planning.

## Compensation Agreements

British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick and Newfoundland have now signed Compensation Agreements with the federal government permitting compensation to be made for injury or death, while in training, to enrolled civil defence workers, on a 50-50 basis.

## Financial Assistance Program

As of the 31 March, 1956, all provinces with the exception of Quebec and Prince Edward Island, were participating with the federal government in the Civil Defence Financial Assistance Program. Of the \$2,000,000 provided for assistance to provinces for civil defence purposes, \$757,824.03 was committed and actual payments to provinces and municipalities totalled \$646,865.23. Quotas, commitments and payments, by provinces, are tabulated below.



TABLE 37  
(Civil Defence Division)  
FEDERAL CIVIL DEFENCE FINANCIAL ASSISTANCE PROGRAM

PROVINCE	Quota	Commitment	Payment
British Columbia.....	187,271.78	187,271.65	187,271.65
Alberta.....	118,921.86	120,195.44	118,030.98
Saskatchewan.....	91,490.08	51,682.00	39,356.49
Manitoba.....	117,285.72	59,355.77	37,126.81
Ontario.....	692,035.92	238,172.58	190,776.47
Quebec.....	603,375.16	.....	.....
New Brunswick.....	63,777.00	30,587.50	12,758.67
Nova Scotia.....	92,128.19	39,559.09	30,780.53
Prince Edward Island.....	10,827.19	.....	.....
Newfoundland.....	45,863.17	31,000.00	30,763.63

Under the terms of this program the federal government agrees to contribute 25 per cent of the cost of certain classifications of municipal civil defence expenditures, submitted and approved on a project basis, irrespective of whether the provincial government also makes a contribution. If the provincial government makes a contribution, the federal government, in addition, matches the provincial contribution dollar for dollar up to a maximum contribution of 50 per cent. For expenditures on approved projects which also have a peacetime use, the federal government agrees to match the provincial contribution dollar for dollar.

**Hose Coupling Standardization Program**

The federal government committed itself by federal-provincial agreement to meet one-third of the cost of standardization of hose couplings in British Columbia, Alberta and Ontario, with the federal share of the program to be as follows:

Ontario.....	\$367,000
British Columbia.....	82,000
Alberta.....	60,000

The programs in Ontario and Alberta have now been completed. It is anticipated that the British Columbia program will be completed in the forthcoming fiscal year. The offer remains open to other provinces desiring to participate.

**Information Services**

During the year a start was made on a new series of civil defence posters and a series of training charts for the various civil defence services. Preliminary writing, editing and production was also begun on several civil defence leaflets including "What is Civil Defence", "Civil Defence and your Life", "Survival in a H-Bomb War". Eight programs in the field of radio were produced and distributed to 104 stations across Canada and a news-clip on evacuation was completed and distributed to 280 theatres. Through the co-operation of Alberta Civil Defence and the City of Calgary Civil Defence organization, a documentary film on "Operation Lifesaver" was made. Distribution of this film is scheduled for the summer of 1956. Scripting and research was undertaken for three additional civil defence films entitled "The H-Bomb and You", "Civil Defence and Natural Disaster", and "The Canadian Civil Defence College". Training items, such as films, maps and charts were produced for civil defence purposes and a most successful newsmen's conference was held at the Civil Defence College. This conference was attended by top-flight newsmen from all informational fields and a second and larger conference along similar lines is to be held within the next year.



During the summer of 1955-56 considerable attention was given to the prevention of home fires, resulting in an increased demand for the civil defence manual "Fires in the Home".

Liaison continued with provincial and municipal civil defence organizations and with the United States Federal Civil Defence Administration during the year.

## Planning

A Planning Section was authorized on the 1 April, 1955 to assist as required, provincial and major Canadian target area Civil Defence authorities in the development and rehearsal of evacuation plans for the rapid dispersal and subsequent reception and care of the population of areas threatened by thermonuclear attacks; and in conjunction with other service and section heads at Federal Civil Defence Headquarters to assist in the development of federal civil defence plans. Three members of this section were engaged during the year under review and the nucleus of the section was well established.

An active part was taken by this section in the evacuation exercise "Lifesaver" held in Calgary during September and assistance was provided to the Alberta provincial staff in the collating of umpire reports and the preparation of the initial report on "Operation Lifesaver" for the information of provincial and federal civil defence authorities.

Preliminary discussions were held in British Columbia with the provincial and the Vancouver Target Area Co-ordinators concerning evacuation planning problems with respect to the City of Vancouver.

## Transportation

Continuing activities were maintained in analysing the civil defence national transportation requirements and the availability of existing transportation of all forms, viz., highway, railway, marine and air, to meet anticipated emergency requirements.

The Federal Civil Defence Transportation Committee, under the chairmanship of Commissioner Chase of the Board of Transport Commissioners for Canada, continued to function in an advisory capacity.

In addition, close liaison was maintained with the United States Federal Civil Defence Transportation Section, which resulted in the exchange of information and knowledge of mutual interest and benefit.

## Warning and Communications

The civil defence early warning network which was established in previous years, was maintained and subjected to monthly tests. This warning system enables warnings to be sent from Air Defence Control Centres by direct line to main key points, from where they are advanced to selected key points by priority toll calls.

Several provinces prepared plans for provincial radio networks which will be used in peacetime for training and exercises and also will be available for use in an emergency.

## Welfare

The Civil Defence Welfare Section continued in its development of an operable plan which will act as a guide for the efficient provision of emergency welfare services in Canadian disasters, either in peace or war. Working committees were organized to consider the principles of proposed programs, the preparation of educational material, and planning and assisting welfare training courses.



Courses pertaining to General Welfare, Emergency Feeding, Emergency Clothing, Emergency Lodging, Registration and Inquiry, were given at the federal Civil Defence College for provincial and municipal civil defence officials and welfare workers.

A careful study of Civil Defence Welfare Services in Great Britain and the United States was undertaken, and visits made to the two countries in an effort to obtain as much information and material as possible.

Registration and Inquiry forms were revised and work done on the development of the contents of Survival and Evacuation packs.

The change in planning emphasis caused by the advent of thermonuclear weapons was reflected in the addition of three staff members during the year.

The importance of planning in reception areas was recognized by the participation of staff in the evacuation exercises in Bangor, Maine; the provincial Civil Defence Study forum held in Kamloops, British Columbia and in the detailed planning in reception areas of Alberta during the Exercise "Lifesaver".

### **Liaison**

The Liaison Section was authorized on the 1st April, 1955, to maintain direct liaison with provincial civil defence authorities on all matters and with direct emphasis on the Federal Financial Assistance Program and related planning and on provincial and municipal training.

Working from federal Civil Defence headquarters, Liaison officers are responsible for encouraging Provincial Co-ordinators to make use of the specialized knowledge and information available at civil defence headquarters and for arranging conferences between provincial and federal headquarters sections as required. A number of visits have taken place on the above basis with most satisfactory results.

### **Civil Defence Health Services**

The basic function of Civil Defence Health Services did not change during the year but particular emphasis was placed on the development and implementation of those changes in the concepts of Civil Defence Health Services planning arising out of the development of higher yield atomic weapons. The changes referred to were more procedural and geographic than basic, and did not require the abandonment of established training, organization or supply programs.

The stockpiling of essential medical supplies for Civil Defence continued and substantial progress was made in the development of new phases of the supply program including mobile improvised hospitals, emergency supply cupboards for hospitals and supplies for medical units in welfare assembly areas. Considerable progress was made also in the development of plans respecting the public health problems arising out of mass evacuation, including sewage disposal and water supply and purification.

Indoctrination courses were held at the Civil Defence College for physicians, nurses, dentists and pharmacists, with special emphasis placed on instruction beneficial to them in the supporting roles they would be called upon to play, under conditions of atomic, biological and chemical warfare, in the overall Civil Defence organization. By the end of the fiscal year, the total number of physicians indoctrinated through federally-sponsored courses, was approximately 400.

Federal Civil Defence Health Services authorities assisted Canadian Schools of Nursing and Schools of Pharmacy in the further development of civil defence training for undergraduate nurses and pharmacists. Work was continued also during the year



towards a comprehensive survey and assessment of nursing aide, home nursing and other paramedical personnel in Canada.

Federally sponsored Hospital Disaster Institutes were conducted in Montreal for French-speaking staffs of some 35 hospitals in the Province of Quebec and in Toronto, for a similar number of hospitals in the Southern Ontario area. By the end of the year, through this means, the administrators and other chief officers of approximately 150 Canadian hospitals had received information enabling the compilation of practical and functional hospital plans. This represents about two-thirds of the acute hospital beds in Canada.

Casualty simulation, as a training technique for health services personnel, was given considerable impetus not only through the continuation of regular courses at the Canadian Civil Defence College in the art of such simulation but, as well, through the publication of a manual illustrating, in full colour, the method of achieving medical authenticity in simulation. The manual was received both in Canada and abroad as a substantial Canadian contribution.

During the year Civil Defence Health Services collaborated with the St. John Ambulance Association in the publication of a new illustrated text on First Aid technique. This manual will serve not only as the official St. John Ambulance Association instructional text but as the basis for the teaching of First Aid for Civil Defence.

### **Special Weapons**

A parent working party, designed to advise on the implementation of defence policies against special weapons, was established and met for the first time in January, 1956. To sub-committees of this working party, whose membership is drawn from the National Research Council, the Defence Research Board, the Canadian Armed Services, United States Civil Defence, United States Armed Services, Canadian Universities and the Royal Military College, specific questions are referred dealing with numerous aspects of the problems involved; simplifications of defence procedures are being evolved and recommendations for the practical application of principles are being obtained. The Special Weapons Section of Civil Defence Health Services was able, during the year, to furnish accurate information from time to time to professional, university and technical bodies on the subject of special weapons defence, particularly the medical aspects of the problem.

### **Civil Service Civil Defence (Ottawa)**

During the year, 600 federal Civil Service personnel received basic training in the following civil defence skills—Home Nursing, First Aid, Rescue and Firefighting, and 110 persons, previously uninstructed in any phase of Civil Defence attended a series of indoctrination lectures. Special advanced courses in Rescue and Firefighting, aimed at qualifying team members as leaders and instructors, were held and many basically-trained First Aiders came forward for promotion tests during the year.

A number of senior personnel assisted in international exercises, thereby acquiring most desirable experience and a total of 80 qualified First Aiders took part in demonstrations held at Civil Defence College under the auspices of the Civil Defence Health Services.

Emergency evacuation drills were held in the majority of federal government buildings throughout the Ottawa area, implementing the Order-in-Council P.C. 1955-23/1450 dated 28 September 1955, which assigned to the Civil Defence Division of this department the responsibility for the organization and maintenance of Fire Warden Service and evacuation practice drills in premises owned or occupied by the Government of Canada in the Ottawa area.



Numerically, the period 1955-56 commenced with a total of 3,583 persons registered with Civil Service Civil Defence. Of this total, 2,353 were actively engaged in Civil Defence teams throughout the buildings in Greater Ottawa, with 1,230 being carried on reserve status. During the year, 610 persons enrolled in Civil Service Civil Defence while 369 dropped out mainly due to the normal exigencies of the service-retirement, departmental re-organization and changes in employment location.

As of the 31 March, 1956, Civil Service Civil Defence had a total membership of 3,804 trained or partially-trained personnel.

### **Training**

The tempo of training key personnel was again stepped up during the year under review with 63 regular courses and 15 special forums at the Canadian Civil Defence College, where a total of 2,134 persons received special civil defence training. In addition, the services of the Joint Atomic Biological and Chemical Warfare School at Camp Borden were utilized to a considerable degree for the training of Civil Defence workers in these fields. Certain carefully selected provincial and federal officials attended courses conducted by the Federal Civil Defence Administration of the United States and the Civil Defence Staff College in the United Kingdom. The total number of personnel trained to date under federal auspices as of the 31 March, 1956, was 8,100.

An international exercise, "Alert II", involving all of the provinces was conducted in conjunction with the United States Civil Defence authorities. Operational procedures were developed as a result of this and other exercises and were passed to the provinces in the form of courses or written instructions.

All of the provinces are co-operating in the civil defence training program, although the status of organization varies considerably from province to province. A total of 203,936 persons were enrolled in the Civil Defence movement as of the 31 March, 1956. Of these, 77,963 are full-time provincial and civic employees, such as fire, police, utilities and civil defence personnel, and 125,973 are part-time civilian volunteers. Of the total number enrolled, 121,967 have taken civil defence training.

It is interesting to note a large increase in Department of National Defence personnel attendance at Canadian Civil Defence College courses. In 1954, 74 members of the Services attended Civil Defence training courses, while during 1955, 207 Officers and Non-Commissioned Officers attended courses.

### **Civil Defence College**

The Canadian Civil Defence College was established in Arnprior late in 1953. The College's main functions are to train key civil defence personnel in the development of civil defence plans and techniques; to train instructors for local civil defence authorities; and to conduct research in proposed civil defence equipment and operational procedures.

In the field of research, the Canadian Civil Defence College has developed a new method for the carrying of rescue equipment beyond the limits of vehicle travel. Basically, the devise used is the packboard. This project has shown such promise that NATO has become very interested. In conjunction with Defence Research Board officials, the College has participated in the testing of shelters against radioactive fallout. The College is frequently called upon to test types of equipment to determine their suitability for civil defence use.

On the 20 February, 1956, His Excellency the Governor-General visited the College to unveil signed photographs of Her Majesty Queen Elizabeth and His Royal Highness the Duke of Edinburgh.



## ADMINISTRATION BRANCH

The third branch of the Department—Administration—is composed of the Departmental Secretary's Division, Information Services Division, Legal Division, Departmental Library, Personnel Division, Purchasing and Supply Division, and the Research and Statistics Division. As all these divisions serve the entire department, both across Canada and overseas, the further development of departmental activities in many fields during the past year continued to make increasing demands upon them.

### DEPARTMENTAL SECRETARY'S DIVISION

The activities of the Departmental Secretary's Division continued to fall into two broad classes—those which the Departmental Secretary carried out personally and those which were undertaken largely by the staff of the division.

Included among the first group are (a) acting as financial adviser to the Department in respect of many aspects of its work; (b) assisting the Minister and the Deputy Ministers in the long and complicated procedure related to the preparation and approval of the departmental estimates from the time they were first drafted until they were approved by Parliament; (c) acting as the Deputy Ministers' substitute with respect to the approval of accounts payable, travel claims, requests for encumbrances, requests for transfers between allotments, submissions to Council and to Treasury Board, and other financial documents; (d) preparing material for tabling in Parliament; and (e) carrying out many special projects which were assigned from time to time.

The second group of responsibilities were borne by the various Sections of the division as follows:

The *Registry Services* carried out many phases of the work relating to the custody and circulation of the department's official records. This involved the operation of a central registry and eight sub-registries in Ottawa, and the provision of advice, assistance and a certain degree of supervision in respect of records in many departmental establishments across Canada. Good progress was made during the year on the complete reorganization and standardization of the filing system and relating procedures for the entire Indian and Northern Health Services. New or completely revised file series were also created for a number of other divisions. In January the sub-registries serving the Food and Drug Directorate and the Division of Narcotic Control were moved to the new Food and Drug Building and reorganized as one sub-registry. The records retirement program continued to be aggressively pursued, resulting in considerable savings in space, equipment and staff time. Mail, messenger and truck services at Head Office continued to be provided by this section.

The *Accounts and Estimates Section* continued to assist in providing financial advisory assistance to the Department and in relieving Directors and Chiefs of the burden of maintaining accounting records and of routine administrative duties related to financial matters. This section also carried out much of the detail involved in the preparation of departmental estimates and continued to act as liaison between the Department and the Treasury Office serving it.

The work of the *Parliamentary Papers and Correspondence Section* consisted largely of preparing replies to the many thousands of letters and enquiries which were received on a wide range of health and welfare subjects. This section was also responsible for processing, distributing, and recording all submissions, Orders in Council, Treasury Board Minutes, Supplementary Lists, Treasury Board Circular Letters, and other docu-



ments, and for the daily reading of all parliamentary papers and the excerpting, distributing, and indexing of items of interest to this department.

In the *Duplicating Section* almost 17,000,000 duplicating impressions were produced, with the many related operations representing a correspondingly heavy workload. Particular attention was given in the past year to the maintenance of the departmental Addressograph lists which totalled approximately 200,000 names. This resulted in a more complete and informative classification of a number of section of the lists.

A central source of typing assistance was again provided to the entire department in Ottawa by the *Secretarial Services*. As well, all typing and mat work required in the preparation of material for reproduction in the Duplicating Section was done by the Secretarial Services. Varsity facilities continued to be available.

In addition the Departmental Secretary's office acted as an information centre for the entire department and carried out numerous special projects which normally are the responsibility of the secretariat of a large organization.

### INFORMATION SERVICES DIVISION

The Division carried out an extensive program in its three main fields: public information, health education and public relations. In all its operations, its work was made possible by the co-operation of departmental officials and provincial officers and by its Distribution Section and its Biological Photographic Laboratory. The Distribution Section distributed 10,195,900 pieces of literature and 890,000 periodicals and answered 27,000 individual requests. The Biological Photographic Laboratory installed new equipment which improved the quality of copy work, slides and overlays for scientific and technical use and effected an increase in production and a great saving in materials.

Editorial and related services were extended to the whole department. A great deal of miscellaneous material, such as maps, cheque inserts, charts, pictorials and displays, was prepared for many divisions. Civil Defence, in particular, required considerable effort in providing training aids and graphics.

#### Public Information

The Departmental magazine, "Canada's Health and Welfare" was produced regularly and two supplements—on mental health and on the work of the Occupational Health Division—were published. "F.Y.I."—a periodical with news for those interested in health education—was also produced regularly.

"Here's Health", the Division's series of ten-minute dramatic presentations, continued to be used by more than 100 stations as it has been, uninterruptedly, for seven years. For the 17th consecutive year National Health Notes, radio flashes and the monthly Radio Letter were prepared and sent out to all radio stations.

Press fillers were prepared and sent to all English and French daily newspapers and "Canada's Health", a column, went to weeklies.

Four sets of slides, complete with commentary, were prepared for television and the first was aired at the end of the year. C.B.C. showed interest in these slides and they are expected to become an important medium. In addition, several of the Department's films were shown and discussed on TV, and considerable T.V. coverage of the work of the Department was given in news and feature telecasts. Excellent relations with the radio field continued to provide good co-operation.

The work of getting films for possible inclusion in the National Film Libraries was carried on. A number of films were seen, evaluated, purchased and sent out on block bookings to the Provinces. A catalogue of Welfare films was produced and the large catalogue of Health films was almost completed at the end of the year.



## Health Education

Although no federal-provincial health educators conference was held this year, advantage was taken of every opportunity to discuss mutual problems with provincial health educators and close liaison was maintained with them.

A distribution policy was finally agreed upon with members of the Treasury Board whereby the Department may distribute free all the publications it prints, but must limit its production of "Canadian Mother and Child", "Up the Years", "The Backward Child" and "Dental Health Manual" to roughly 75 per cent of a five-year average.

In addition to a large volume of reprinting for all divisions, the following new health education materials were produced:

*Films:* "From Ten to Twelve", "Operation Lifesaver", Newsclips on Evacuation and on Women in Civil Defence, and the beginning of a film on malocclusion. *Filmstrips:* "Before Baby's Birth Day" and "Caring for Baby" (to replace the now obsolete "Nine to Get Ready" and "Introducing Baby"); "Feeding Habits" and two strips on "Sex"; "An Indian in Hospital", "An Eskimo in Hospital".

*Publications:* "Before Baby's Born", "Education for Expectant Parents" (a manual for nurses giving prenatal classes), "Rheumatic Fever in Children", "Crooked Teeth—Crooked Faces"; "Mental Retardation"; "Opportunities for Registered Nurses in the Mental Health Field"; "Opportunities for Social Workers in the Mental Health Field"; "Parent Education"; "Sleeping Habits"; and "Quackery".

*Posters:* Various posters were developed for the Mental Health, Occupational Health and Family Allowances Divisions.

*Exhibits:* A number of exhibits were produced for use at various conferences and institutes.

## Public Relations

An unusually large number of journalists, writers and broadcasters turned to Information Services for assistance, particularly in regard to the Salk vaccine program. In addition a number of public health and information officials from many countries came to the Division for briefing. The usual courses were held for nurses from the Universities of Ottawa and McGill, and the New Brunswick health educator spent a week with this division.

Members of the Division represented the Department at exhibits at the British Medical—Canadian Medical Association convention, at the National Council of Social Work, the Canadian Council of Social Work, the Canadian Dental Association, the Canadian Public Health Association, the U.S. Public Health Association, the Canadian Highway Safety Conference, the Home Show and the Canadian Nurses Association. They also attended meetings of the Interdepartmental Committee on Publications, the Joint Planning Commission, the Conference of French Weeklies, the Newsmen's Course at Arnprior, Ont., and other conferences, and handled public relations at two disaster planning institutes, "Operation Lifesaver" in Calgary, while they assisted in program planning for a cooperative industrial health unit in Kitchener and a community preparedness program at Belleville.

## LEGAL DIVISION

The Legal Division provides professional legal, as well as administrative, services to the entire department in matters within departmental responsibility and concern. These services include the furnishing of legal advice and opinions, the preparation of contracts, agreements and other legal documents, the interpretation of statutes and regulations within departmental administration, advising on prosecutions thereunder, including the Food and Drugs Act, the Opium and Narcotic Drug Act, the Family Allow-



ances Act and the Old Age Security Act. Involved in the above is liaison with other Departments and agencies of government, including the Royal Canadian Mounted Police in matters relative to the Opium and Narcotic Drug Act and the Food and Drugs Act.

During the past year the Legal Division provided assistance to the Special Committee of the Senate on the Traffic in Narcotic Drugs in Canada and the Legal Adviser acted as a technical adviser to the Committee. The Division was responsible for the revision and consolidation of certain of the regulations enacted under departmental legislation, the drafting and revision of legislation for submission to the Department of Justice and the preparation of submissions and recommendations to the Governor in Council and the Treasury Board.

The Legal Division, through the Legal Adviser, provided consultative legal services to a number of voluntary health agencies and organizations, including the National Cancer Institute of Canada, the Canadian Association of Radiologists, the Canadian Association of Radiological Technicians and the newly formed Canadian Heart Foundation. The Legal Adviser and other legal officers of the Division represented the Department in investigations and on various boards concerned with administrative and policy matters in which the Department has some interest or responsibility.

The staff of the Legal Division provided necessary and related secretarial and clerical services, including the collection of Family Allowances overpayments.

### DEPARTMENTAL LIBRARY

The Departmental Library continued the selection, acquisition and organization of reference and technical books, serials, pamphlets and government documents on all subjects related to the department's work for collections in Ottawa and field establishments.

Cataloguing of all collections was carried on in the Main Library where a master-catalogue by author, title and subject of all holdings was kept up to date. Additional finished catalogue records were supplied to other establishments and the National Library's Union Catalogue. The cataloguing staff also compiled or edited bibliographies and indexes as required.

In April 1955 the responsibility of the Department of Public Printing and Stationery for the purchasing of books was transferred to Departments and the National Library. In co-operation with the Purchasing and Supply Division, much time was given to setting up a system of ordering in the Library and to some selection of suppliers. During the year investigation was made of the requirement and cost of authors' reprints ordered by the Department.

In January the branch library for the Food and Drug Directorate was moved to the new Food and Drug building at Tunney's Pasture. The second floor of the centre wing of the building is designed for library use and supplied with new equipment and furniture. Space in the basement of this building has been arranged to serve as storage for older scientific publications for all the department's laboratories in the Tunney's Pasture area, thus releasing the other library storage space for other publications.

Surplus publications which accumulate are used for exchange purposes or for donations. During the past year shipments of scientific journals were sent to the Korean Commission for UNESCO and to the Department of External Affairs for presentation to medical libraries in Ceylon.

### PERSONNEL DIVISION

The Personnel Division served all directorates and divisions of the department in the areas of personnel management and organization.



Difficulty in recruiting and retaining professional and technical staff continued. This reduced considerably the stability which is so essential to the department in carrying out its most effective work. In consultation with the Civil Service Commission the Personnel Division is exploring all the possibilities of solving this problem.

The Personnel Division represented the department in the examination of staff estimates on the Establishment Review Committee under the new procedure approved by the government. It is expected that this new procedure, when developed, will allow more flexibility in day-to-day personnel administration within the department and may assist in overcoming some of the past difficulties.

In general, reasonable progress was made during the past year in strengthening the organization of the department.

Tables 38, 39 and 40, following, contain statistics relating to the staff situation for 1955-56.

TABLE 38  
(Personnel Division)  
STAFF STRENGTH, BY DIVISION  
At March 31, 1955 and March 31, 1956

DIVISION	Strength, March 31, 1955		Strength, March 31, 1956	
	Full Time	Part Time	Full Time	Part Time
Minister's Office.....	18	.....	19	.....
Departmental Secretary.....	128	.....	128	.....
Information Services.....	26	.....	25	.....
Legal.....	6	.....	7	.....
Library.....	16	.....	12	1
Personnel.....	39	.....	38	.....
Purchasing and Supply.....	22	.....	24	.....
Research and Statistics.....	38	.....	37	.....
Health Administration.....	15	.....	17	.....
Medical Rehab. and Disability Adv.....	.....	.....	4	.....
Blindness Control.....	4	.....	4	.....
Child and Maternal Health.....	7	.....	4	.....
Civil Aviation Medicine.....	5	7	6	7
Civil Service Health.....	78	.....	75	.....
Dental Health.....	6	.....	5	.....
Epidemiology.....	17	.....	11	.....
Food and Drug.....	217	.....	212	.....
Health Insurance and Health Grants.....	22	.....	19	.....
Hospital Design.....	4	.....	3	.....
Occupational Health.....	41	.....	52	.....
Laboratory of Hygiene.....	96	.....	96	.....
Mental Health.....	8	.....	5	1
Nutrition.....	20	.....	19	.....
Narcotic Control.....	29	.....	29	.....
Proprietary or Patent Medicine.....	6	.....	8	.....
Public Health Engineering.....	33	1	29	1
Quarantine, Imm. Medical, etc.....	389	18	383	18
Indian Health Services.....	1,409	57	1,580	61
Welfare Administration.....	3	.....	5	.....
Physical Fitness.....	6	.....	.....	.....
Social Aid Division.....	15	.....	19	.....
Family Allowances and Old Age Security.....	839	.....	844	.....
Civil Defence.....	127	.....	152	.....
Northern Health Services.....	.....	.....	11	.....
	3,689	83	3,882	89

TABLE 39  
(Personnel Division)  
GEOGRAPHICAL DISTRIBUTION OF STAFF  
As at March 31, 1956

	Welfare Branch including Civil Defence	Directorate of Indian Health Services	Health Branch	Administration Branch	Total
Ottawa.....	89	35	443	291	858
Northwest Territories.....	.....	26	.....	.....	26
British Columbia.....	67	481	60	.....	608
Alberta.....	56	333	5	.....	394
Saskatchewan.....	55	167	3	.....	225
Manitoba.....	48	182	18	.....	340
Ontario.....	355	385	38	.....	686
Quebec.....	217	23	223	.....	463
New Brunswick.....	40	8	16	.....	64
Nova Scotia.....	53	11	70	.....	134
Prince Edward Island.....	10	1	1	.....	12
Newfoundland.....	30	.....	9	.....	39
Overseas.....	.....	.....	122	.....	122
Total.....	1,020	1,652	1,008	291	3,971



TABLE 40  
(Personnel Division)  
CHANGES OF FULL TIME STAFF WITH SPECIAL REFERENCE TO PROFESSIONAL CLASSES

Classification	Number of authorized positions March 31, 1956	Number appointed during the fiscal year	Number transferred or promoted during the fiscal year	Number terminated during the fiscal year	Number of vacant positions March 31, 1956	Approximate number of terminations per 100 employees
Physicians.....	293	19	11	26	32	8
Dentists.....	14	6	1	6	4	.....
Registered Nurses.....	436	174	33	145	52	33
Chemists.....	92	6	7	6	10	6
Bacteriologists.....	19	1	.....	2	2	.....
Pharmacists.....	5	2	.....	.....	.....	.....
Laboratory Technicians.....	98	1	.....	7	7	.....
Nutritionists.....	9	.....	.....	.....	.....	.....
X-Ray Operators.....	34	9	3	14	16	.....
Food and Drug Inspectors.....	41	7	5	.....	11	.....
Public Health Engineers.....	26	1	2	3	.....	.....
Social Workers.....	30	2	.....	7	10	.....
Information Officers.....	9	4	3	5	1	.....
All other classes.....	3,262	843	190	756	252	23
Total.....	4,368	1,075	255	977	397	22

## PURCHASING AND SUPPLY DIVISION

The Purchasing and Supply Division continued to meet the departmental requirements for materials, equipment, supplies, accommodation, printing and stationery, telephones, and other public utility services. This included contracting for and procuring scientific, technical and medical equipment for hospitals, laboratoires, health units, clinics, the Civil Defence College, and Quarantine and Immigration stations. It involved shipments to the Northwest Territories, Eastern and Western Arctic, United Kingdom and Continental Europe by boat, rail, air, snowmobile, and tractor train.

The new Food and Drug Building was erected at Tunney's Pasture during the year, necessitating the purchase by this division of a great deal of additional technical and scientific equipment to accommodate the expanding program of that directorate.

This division continued to consolidate inventory and a more extensive program of control in this field is being carried out. New standards and specifications are continually being implemented.

Approximately 13,500 requisitions were processed embracing almost every commodity and involving orders placed with manufacturers and suppliers in all parts of Canada and the United States and with other federal departments.

The division continued to operate and expand departmental stores in Ottawa, and over 5,600 shipments were made from there during the year.

## RESEARCH AND STATISTICS DIVISION

The Research and Statistics Division carries on a program of analysis and evaluation of basic information on health and welfare matters, with special reference to their social and economic aspects and to questions of methodology. It prepares reports and generally acts in an advisory capacity to senior officers of the department as required. It works in close co-operation with other divisions and maintains liaison with agencies in Canada and abroad engaged in work of social or economic interest to the department.

During the year the division maintained an intensive research program to assist federal-provincial planning and discussions in the field of health insurance and carried out various studies in the fields of medical and hospital care, health and health services, rehabilitation of the disabled, disability pensions, manpower problems, welfare and income security.

Major projects commenced during the year included study of the general problems raised by the effects of ionizing radiation, in co-operation with the Occupational Health Division, Atomic Energy of Canada, Limited, and the Bureau of Statistics. A comprehensive study of government expenditures on health and welfare services in Canada was carried out and the bulletin *Government Expenditures and Related Data on Health and Social Welfare 1947 to 1953* was published, as well as bulletins on particular aspects of health and welfare subjects.

Assistance was given to the Department of Labour in the presentation of Canada's views at the 38th Session of the International Labour Organization in Geneva in June 1955 which the Director attended as a Canadian government advisor. The head of the Biostatistics Section represented the Department at the International Conference on Radiation Genetics Research. The Canadian position paper on the use of Leisure Time in Canada was prepared by the division, in consultation with the Consultant on Physical Fitness, for the International Conference on Social Work held in Munich in 1956.



## Health Care

The work in health insurance which has been carried on in the division for a number of years was extended after the preliminary federal-provincial conference on fiscal matters in April 1955, when it was agreed that health and welfare services would be included in the agenda for the second conference to be held in October. At the request of the July conference of Deputy Ministers of Health an extensive series of preliminary statistical and financial data were provided for each province, to assist in the preparation of provincial cost estimates for hospital and laboratory and radiological diagnostic services.

Cost estimates were prepared for the January 1956 meeting of the Committee of Health and Finance Ministers, established at the October Conference, when the federal government announced its offer to share costs of a program of hospital care and laboratory and radiological diagnostic services. The Director of the Division testified before the Conference on cost estimates and, together with other research officers of the division, acted in an advisory capacity during its meetings.

Background information prepared for the Federal-Provincial Conference in October included a number of bulletins. *Selected Public Hospital and Medical Care Plans in Canada* described the operations of the British Columbia Hospital Insurance Service, the Alberta Municipal Hospitals Program and Maternity Hospitalization Plan, the Saskatchewan Hospital Service Scheme, the Newfoundland Cottage Hospital Program, the medical-dental care program in the Swift Current Health Region of Saskatchewan and the municipal doctor arrangements in Manitoba and Saskatchewan. *Voluntary Medical and Hospital Insurance in Canada* dealt with the operations of private insurance companies, of Trans-Canada Medical Plans and of the Canadian Council of Blue Cross and other selected non-profit plans, in terms of coverage, benefits offered by different types of contracts, and administrative and financial procedures. To supplement this publication, which was based on 1953 data, questionnaires were prepared and circulated to the different plans in March 1955 to request information on 1954. The replies were summarized in a short series of supplementary tables, which have been made available for general distribution.

In addition two documents were prepared to present data on the cost of health services to Canadians, and trends in expenditures on health and welfare services over a period of seven years. In *Health Care in Canada: Expenditures and Sources of Revenue, 1953* an estimate was made of how much Canadians spent for different items of health care in that year, and from what sources funds were derived to pay for services.

The Bulletins *Government Expenditures and Related Data on Health and Social Welfare*, *Hospitals in Canada* and *Tuberculosis Services in Canada*, described elsewhere in this Report, were designed to give the Conference additional data on subjects closely related to those under discussion.

The Division continued its co-operation with the Bureau of Statistics in analysis of data collected in the Canadian Sickness Survey. During the year the bulletins *Incidence and Prevalence of Illness* and *Volume of Health Care for Selected Income Groups* were published.

At the request of the Newfoundland Department of Public Health the head of the Health Care Section of the division spent some time in that province analyzing data on the operation of the Cottage Hospital Program. Certain hospitals and diagnostic centres in Manitoba were also visited to obtain data relating to the provision of laboratory and radiological diagnostic services. Visits to the Maritime Provinces and Manitoba were made to discuss questions relating to hospital bed facilities and per diem costs.



Information on the financing of health services and the extent of provision through insurance against the costs of illness in Canada was supplied to foreign embassies, international organizations, members of parliament, university staff members, labour dispute arbitrators, representatives of employers and unions, and other agencies and persons. At the request of the Chairman of the National Joint Council, information was secured from each province on the extent of government premium-sharing in health care plans for public employees. The Division maintained an active interest in the proceedings of the Canadian Medical Care Conference and a member of the Division participated in a panel discussion on the Canadian Sickness Survey, at the second Canadian Medical Care Conference in Edmonton in September 1955.

## Health Problems

The head of the Biostatistics Section represented the division on the technical committee established by the department to consider the general problem of the effects of ionizing radiation. As a member of the genetics sub-committee, he drafted a sub-committee report and material relevant to the development of research work in Canada. The head of the section also attended, as an observer for the department, the international conference on radiation genetics research, held at the Atomic Energy Research Establishment at Harwell, England, in September 1955, and subsequently visited the Ministry of Health and Registrar General in London and Southport, England, the World Health Organization in Geneva and the Danish National Health Service and Cancer Registry in Copenhagen, with a particular view to study of the development and integration of statistical services.

Association with the Epidemiology and Occupational Health Divisions was continued in the conduct of the Windsor-Detroit Air Pollution Health Study. During the year the field work in connection with the health study was completed and assistance was given to evaluation of the accuracy of the methodology. Further analysis of the survey results on the Canadian side was carried out in preparation of the final report to the International Joint Commission Technical Advisory Board on Air Pollution. The head of the Biostatistics Section participated in the first meeting of the new departmental Technical Committee on Air Pollution, which considered plans for further atmospheric pollution studies.

The Division continued its study of health statistics published by the Dominion Bureau of Statistics and other agencies; tabulations and source reference material were provided in a number of instances for department use and in response to queries from non-government sources; most enquiries received were for data on heart disease, cancer, tuberculosis and accidents; other topics included multiple sclerosis, epilepsy, barbiturate deaths and suicides. Comparison of health conditions between different regions of Canada and between Canada and other countries was also frequently requested. At the request of the National Film Board, material and technical advice was provided for a film on accident hazards in childhood.

## Health Methods

The Division prepared comments on a W.H.O. Memorandum respecting the health component of a level of living index, and on proposed revisions to the Regulations for the International Statistical Classification of Diseases, Injuries and Causes of Death.

Assistance was provided to other divisions of the department on such problems as the design of a questionnaire for, and the carrying out of summary tabulations of, data on back injuries in industry for the Occupational Health Division; the planning of a blindness-nutrition survey in New Brunswick; selection of sample size and recording procedures in a physical fitness test calibration project; and the tabulation of data on



response to an exhibition of educational materials produced by the Information Services Division of the department.

The Division also provided a consultative statistical service, including sample size estimates and advice on the feasibility of alternative plans for various projects. Assistance was given to the Epidemiology Division in the preliminary planning for a BCG evaluation study, an investigation of the relationship between lung cancer incidence and possible etiologic factors including smoking, and a study of accidents involving school children. Some advice was given in connection with an evaluation of polio vaccine experience in Canada in the past year, and was also given to a number of divisions in their advisory capacity under the National Health Program, on projects such as replacement procedures in sampling in a neonatal mortality investigation, techniques for analysis of cerebral palsy study data and respecting research or statistical units in provincial health departments.

Assistance was also given to a number of divisions, including the Health Grants Administration, Indian Health Services and the Disability Allowances authorities in the development of record systems; this has included the preparation of record cards and reporting forms and advice respecting practical and useful tabulations of recorded data.

### Health Services

Additional sections of *Canada's Health Services*, a report describing in detail the public and voluntary health services and resources available to Canadians, were completed during the year. Although work pressures prevented this comprehensive report being published when planned it is hoped that its publication will be possible in the near future.

Of the two major bulletins on health services published during the year, *Hospitals in Canada* contained a detailed study of active treatment and chronic hospitals in the post-war years and included analyses of bed facilities, personnel, bed utilization and finances, as well as of bed requirements. *Tuberculosis Services in Canada* described voluntary and government programs of case finding, treatment and rehabilitation in all provinces.

A comprehensive review of data on the Sick Mariners Service was prepared for the departmental committee reviewing this program.

A special study of hospital bed standards and requirements, on which estimates of hospital accommodation required might be based for the next twenty-five years, was drawn up for the Royal Commission on Canada's Economic Prospects. A comprehensive report covering the major aspects of health planning in Canada was prepared for the World Health Organization for presentation at its ninth Assembly in April 1956, and the division continued to keep the World Health Organization informed on changes in health legislation in Canada.

An historical analysis of Canadian narcotic legislation was commenced, a number of short studies were carried out on different aspects of narcotic control enforcement and some documentation was prepared as background material for the Senate Committee on the Traffic in Narcotics in Canada.

An extensive report on Occupational Health Services in Industry, based on data collected in the April 1954 Survey of Labour Conditions conducted by the Department of Labour, was prepared for the Occupational Health Division for publication as a bulletin. In the study an analysis was made of the number of establishments and employees provided with services and of physicians and nurses employed.



## Dental Health

In its continued collaboration with the Dental Health Division in fluoridation studies, the division completed an analysis of the latest series of dental examinations and assisted in drafting the 1955 report on the dental effects of water fluoridation. Collaboration was also extended to the Dental Health Division in the preparation of a paper on the overall results of fluoridation projects from 1948 to 1955, for publication in the Canadian Dental Association Journal. The analysis of dental examinations related to stannous fluoride evaluation was completed and a report incorporated in a paper presented by the Dental Health Division at the 1955 Annual Meeting of the Canadian Public Health Association. The Division also assisted in the planning of future projects to be carried out by the Dental Health Division.

## Health Manpower

A report, *Specialists in Canada, June 1954*, was published as a supplement to *Survey of Physicians in Canada*, and statistical information on health personnel, including data on armed forces reserve medical officers, industrial health physicians and on nurses, was provided to the Defence Medical and Dental Services Advisory Board.

At the request of the Civil Defence Health Planning Group the Division undertook the preparation of a manual on the conduct of nursing surveys and provided field direction in the analysis of the results of the Nova Scotia Nursing Inventory for which the previous year's Manitoba Survey, reported on in *Survey of Nursing Personnel in Manitoba*, was used as a model. Co-operation was continued with the Department of Labour in assessment of health manpower problems.

Basic statistics on trends in the supply and distribution of doctors, dentists, and nurses were made available to the Royal Commission on Canada's Economic Prospects and comprehensive data on public health personnel in Canada were supplied to the Pan-American Sanitary Bureau.

The Director of the division assisted the Director of Health Services in advising the College of General Practice on its Survey of General Practice and some suggestions regarding sample size and survey procedures were made.

## Rehabilitation

Aid was given to the Department of Labour in preparation of Canada's views on the Recommendation on the Rehabilitation of Disabled Persons adopted by the International Labour Organization at its 38th Session. The Division continued to assist the National Advisory Committee on the Rehabilitation of Disabled Persons and the Director acted as the Departmental Representative at the annual meeting held in Quebec in 1955. Studies of rehabilitation and chronic illness services were extended and special statements on rehabilitation services and services for the aged were prepared for the World Health Organization as well as reports for departmental use.

## Disability Statistics

A marginal punch card system was established for the analyses by age, sex, and disability of medical characteristics of applicants for disability allowances whose cases had been reviewed by medical review boards in the provinces, to make data available for study on persons accepted, rejected for medical reasons, referred for rehabilitation or on whom decision was deferred. In January 1956 an analysis of the first 15,000 accepted cases, together with rejected cases in selected provinces, was completed for a conference of Review Board members called by the department.



## Child and Family Welfare

Progress was made in the planning and initial development of the long-term study of child welfare reporting and statistics in Canada. Undertaken at the request of the Canadian Welfare Council, this project is designed to encourage comparability in the use of basic definitions and in the substance and method of reporting. Meetings were held with representatives of the Canadian Welfare Council and the Bureau of Statistics and with provincial directors of child welfare in a number of provinces. A staff member visited the United States Children's Bureau and conferred with child welfare officers there. A number of preliminary memoranda for discussion with the Advisory Committee on Child Welfare Reporting and Statistics of the Canadian Welfare Council were in course of preparation at the end of the year. These set out common factors and variations in present reporting and examined the concepts and definition on which provincial child welfare reporting now rests.

Preparatory work was also underway on *Changes and Developments in Family and Child Welfare, 1953-55*, one of the periodic reports undertaken at the request of the United Nations. Draft chapters of the bulletin *Deserted Wives and Children's Maintenance Legislation* were sent to provincial departments of welfare for review. A first draft of a study of provincial legislation on the adoption of children in Canada was nearing completion at the end of the year.

Special memoranda on family and child welfare included reference data on orphanhood in Canada, the reception and maintenance of repatriated children, the adoption of children by Canadians living outside Canada, surrender provisions of provincial adoption laws and the length of stay of emotionally-disturbed children in selected institutions. Bibliographical material was also prepared as requested on a number of occasions.

The Division was represented on an advisory committee to plan a research project on trends in institutional care for children as reflected in the one hundred years service of the Sunnyside Children's Centre, Kingston. At the request of the committee, a review was prepared of a twenty year period in the early history of the institution, with special attention to the impact of provincial grant and supervision on its progress and policy.

Consultative services were provided on several projects. These included consideration of the factors to be examined in the selection of a sample and the preparation of a questionnaire for a study to determine need for child and family welfare services in a metropolitan area. Consultative services were also given on projects concerned with the protection of special groups of children and the simplified assessment of clients' fees in a homemaker's agency.

## Welfare Services for Older Persons

Trends in the development of services for older people in Canada and, to some extent, in other countries, were kept under review, which included study of changes in legislation and patterns of service as well as of demographic data. Material prepared in the field of aging dealt with federal measures to assist in providing accommodation for older people, retirement and the employment of older professional workers, and geriatric programs in Canada. A review of research and other studies on behalf of older persons was prepared as background material for a radio series on aging. Progress was made on a bulletin on federal and provincial legislation on living accommodation for the older person, with special reference to principles and standards established and the distribution of administrative and financial responsibility.

Advisory services were made available to local committees on aging on such subjects as significant factors to be studied in surveying the needs of older people in Can-



adian cities, with special reference to problems of sampling, and the content and form of the interview schedule, and on a proposed television film on the care of the older person.

The Division was represented on, and prepared documentation for, the Committee on Aging of the Canadian Welfare Council, the Interdepartmental Committee on the Older Worker and the Committee on Aging of the American Public Welfare Association. Work undertaken in connection with these committees has included the study and revision of committee documents; the preparation of background material dealing, among other things, with statistical data, demographic trends and survey methods; and participation in writing committee reports. A member of the division attended the Eighth Annual Conference on Aging at the University of Michigan.

### Community Services

Study of community services continued, with review of programs for special groups and problems of financing voluntary services. The Director served on the National Executive Committee of the Chests and Councils Division of the Canadian Welfare Council, and the head of the Welfare Section acted as departmental representative on the Council's National Committee on the Welfare of Immigrants.

### Manpower in Welfare Services

Study was continued of the problem of securing personnel for welfare services. The head of the Welfare Section participated in planning for the one-day conference on "Staffing our Social Agencies" held as part of the Annual Meeting of the Canadian Welfare Council and the Director presented an analysis of basic data on the shortage of qualified social workers in Canada. The *Summary of the Survey of Welfare Positions*, including some additional data, was prepared for use as the source document at the conference. The head of the Welfare Section took an active part in the work of the Standing Committee on Personnel of the Canadian Welfare Council in its consideration of problems arising out of the shortage of social workers, with particular reference to in-service training, and in the preparation of a report to the National Workshop on Social Work Education. A French edition of the *Report of the Survey of Welfare Positions* was published.

A memorandum on the training of welfare personnel and on the advisability of a third international survey of social work training in Canada was prepared at the request of the United Nations. As a member of the Research Commission of the United States Council on Social Work Education, the Director was concerned with problems of training and with research on curricula of schools of social work and other studies undertaken by the Commission.

### Other Welfare Services

Certain background material was prepared in connection with the proposed program of federal aid for unemployment assistance. The Division co-operated with the Department of Labour in a number of projects concerning industrial pension plans and assistance was given to that department in the presentation of Canada's views on matters concerning the welfare of workers at the 38th Annual Session of the International Labour Organization. Consultations were held on some preliminary aspects of the nation-wide study of married women in employment conducted by the Women's Bureau of the Department of Labour. Projects were suggested for individual and group research suitable for candidates for higher degrees in social work and to indicate areas of need where research might be undertaken with community support. A report on departmental activities was prepared for inclusion in the Canadian Welfare Council bulletin on



"Developments in Public Welfare, 1954-55", published during the year. The head of the Welfare Section represented the division on the Editorial Board of "Canadian Welfare".

### Miscellaneous

Sections of the Canada Year Book and other official publications dealing with health, welfare and social security were prepared by the division as in other years. Articles were written for "Canada's Health and Welfare" on Child Welfare Progress in Britain, on Day Care Centres, Homemakers, and Boarding Home Programs for the Aged in New York City, The New National Sickness Insurance Program in Sweden, The Swedish Program for Control of Alcoholism, The Long-Term Patient in the United States, Intergovernmental Problems in the United States, Welfare Facilities for Workers and the Rehabilitation Resolution adopted by ILO, Social Insurance in Austria, and other subjects. Pamphlet and book reviews were prepared on current professional literature, and assistance continued to be provided to agencies and persons in the preparation of reports for publication related to the work of the department.

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# DEPARTMENT OF NATIONAL HEALTH AND WELFARE

## MINISTER

HONOURABLE PAUL MARTIN, Q.C., M.P., LL.M., LL.D., D.C.L.

*Parliamentary Assistant*, Frederick G. Robertson, M.D., M.P.

*Executive Assistant*, George M. Carty, B.A.

*Private Secretary*, D. G. Emerson

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Deputy Minister of National Health and Welfare (Health)

G. D. W. Cameron, M.D., C.M., D.P.H., LL.D.

Deputy Minister of National Health and Welfare (Welfare)

G. F. Davidson, B.A., M.A., Ph.D., LL.D.

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*Assistant Director (Administrative and Inspection Services)*, P. A. Faguy.

Proprietary or Patent Medicines Division, *Chief*, Paul Soucy, Phm.B.

NARCOTIC CONTROL DIVISION—*Chief*, K. C. Hossick.

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*Associate Director*, K. C. Charron, M.D.

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Dental Health Division, *Chief*, H. K. Brown, D.D.S., D.D.P.H.

Hospital Design Division, *Chief*, H. G. Hughes, B.Arch., A.R.I.B.A., M.R.A.I.C.

Mental Health Division, *Chief*, C. A. Roberts, M.D., C.M., L.M.C.C.

Nutrition Division, *Chief*, L. B. Pett, B.S.A., M.A., Ph.D., M.D., C.P.H.

*Chief Nursing Consultant*, D. M. Percy, R.R.C., Reg.N.

### ENVIRONMENTAL HEALTH AND SPECIAL PROJECTS

*Principal Medical Officer*, E. A. Watkinson, M.D., C.M., D.P.H.

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Public Health Engineering Division, *Chief*, J. R. Menzies, B.A.Sc., O.L.S., C.E.

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### NATIONAL HEALTH GRANTS

*Principal Medical Officer*, G. E. Wride, M.D., D.P.H.

### RESEARCH DEVELOPMENT

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Laboratory of Hygiene, *Director*, J. Gibbard, B.S.A., S.M., F.R.S.C.

### INDIAN AND NORTHERN HEALTH SERVICES:

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*Associate Director*, H. A. Procter, D.S.O., M.D., Ph.D.

*Assistant Director*, W. B. Brittain, B.Sc.



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**DIRECTORY OF DEPARTMENTAL ESTABLISHMENTS****ADMINISTRATIVE OFFICES****OTTAWA**

Jackson Building, Bank Street  
 Birks Building, Sparks Street  
 Booth Building Sparks Street  
 Garland Building, Queen Street  
 No. 3 Temporary Building, Wellington Street  
 Trafalgar Building, Queen Street  
 Daly Building, Mackenzie Avenue

**CIVIL DEFENCE COLLEGE**

ARNPRIOR, Ont.—P.O. Box 2050

**FAMILY ALLOWANCES AND OLD AGE SECURITY**

ST. JOHN'S, Nfld.....	29 Buckmasters' Field
CHARLOTTETOWN, P.E.I. ....	59 Queen Street
HALIFAX, N.S. ....	Industrial Building
FREDERICTON, N.B. ....	Federal Building
QUEBEC, Que. ....	51 Boulevard des Capucins
TORONTO, Ont. ....	122 Front Street West
WINNIPEG, Man. ....	138 Portage Ave. East
REGINA, Sask. ....	Dominion Government Building
EDMONTON, Alta. ....	10182 103rd Street
VICTORIA, B.C. ....	Federal Building

**FOOD AND DRUG LABORATORIES**

OTTAWA, Ont. ....	Tunney's Pasture
HALIFAX, N.S. ....	Dominion Public Building
MONTREAL, Que. ....	379 Common Street
TORONTO, Ont. ....	27-39 St. Clair Ave. East
WINNIPEG, Man. ....	Aragon Building
VANCOUVER, B.C. ....	Federal Building

**FOOD AND DRUG OFFICES**

OTTAWA, Ont. ....	Tunney's Pasture
HALIFAX, N.S. ....	Dominion Public Building
CHARLOTTETOWN, P.E.I.....	100 Fitzroy Street
SAINT JOHN, N.B.....	250 Prince William Street
SYDNEY, N.S.....	Naval Administration Building
ST. JOHN'S, Nfld.....	T.A. & B. Society Building
QUEBEC, Que.....	375 Dorchester Street
THREE RIVERS, Que.....	Post Office Building
SHERBROOKE, Que.....	315 King Street West
MONTREAL, Que.....	379 Common Street
TORONTO, Ont. ....	27 St. Clair Ave. East
BELLEVILLE, Ont.....	12 Bridge Street East
HAMILTON, Ont. ....	Federal Building



KITCHENER, Ont.....	Dominion Public Building
LONDON, Ont. ....	Dominion Public Building
WINDSOR, Ont. ....	Dominion Public Building
SUDBURY, Ont. ....	Federal Building
PORT ARTHUR, Ont.....	33 Court Street South
WINNIPEG, Man. ....	Aragon Building
SASKATOON, Sask. ....	219-22nd Street East
REGINA, Sask. ....	Federal Building
CALGARY, Alta. ....	Customs Building
EDMONTON, Alta. ....	Post Office Building
KAMLOOPS, B.C. ....	345 Victoria Street
VANCOUVER, B.C. ....	Federal Building
VICTORIA, B.C. ....	805 Government Street

## IMMIGRATION MEDICAL SERVICE OFFICES

### Canada

GANDER Nfld. ....	Gander Airport
HALIFAX, N.S. ....	Immigration Building, Pier 21
MONCTON, N.B. ....	Moncton Airport
MONTREAL, Que. ....	379 Common Street and Dorval Airport
QUEBEC, Que. ....	Immigration Hospital, Quebec-West
SAINT JOHN, N.B.....	Pier 9, Immigration Building
ST. JOHN'S, Nfld.....	Marshall Building, Water Street, P.O. E5109
STEPHENVILLE, Nfld. ....	Harmon Field Airport
TORONTO, Ont. ....	737 Church Street and Malton Airport
VANCOUVER, B.C. ....	Immigration Building, foot of Burrard St. and Sea Island Airport
VICTORIA, B.C. ....	Immigration Building
WINDSOR, Ont. ....	Windsor Airport
WINNIPEG, Man. ....	Winnipeg Airport

### Overseas

LONDON, England.....	61 Green Street, Mayfair, W.1
BELFAST, Northern Ireland.....	65 Chichester Street
GLASGOW, Scotland.....	18 Woodlands Terrace, C.3
LIVERPOOL, England.....	34 Moorfields, Liverpool 1
BRUSSELS, Belgium.....	230 rue Royale
PARIS, France.....	38 Avenue de l'Opéra
ROME, Italy.....	Via Nimorense, 90
THE HAGUE, Holland.....	12 Carelvan Bijlandtlaan
COPENHAGEN, Denmark.....	Vestagervej 5
KARLSRUHE, Germany .....	Canadian Government Immigration Mission, 11 Redtenbacherstrasse
HANOVER, Germany.....	10 Kirchroederstrasse
BERLIN, Germany.....	Canadian Government Immigration Mission, Berlin-Zehlendorf, Berliner Str. 25
MUNICH, Germany.....	Canadian Government Immigration Mission, Funk Kaserne, Block 1, Freimanner- strasse 218, Meunchen-Freimann

HAMBURG, Germany .....	Canadian Government Immigration Mission, Admiralitaetstrasse, 46
VIENNA, Austria .....	Canadian Legation Visa Section, Tuchlau- ben 8, Vienna
ATHENS, Greece.....	18 Anagnostopoulov St. Kolonaki

### SICK MARINERS CLINICS AND HOSPITALS

HALIFAX, N.S. ....	Immigration Building, Pier 21
SYDNEY, N.S. ....	Marine Hospital
SAINT JOHN, N.B.....	Pier 9
QUEBEC, Que. ....	Louise Basin
MONTREAL, Que. ....	379 Common Street
VANCOUVER, B.C. ....	Immigration Building

### QUARANTINE STATIONS AND SUB-STATIONS

HALIFAX, N.S.....	Pier 21 and Rockhead Hospital
SAINT JOHN, N.B.....	Pier 9 and Quarantine Hospital, Lancaster, N.B.
QUEBEC, Que. ....	Louise Basin and Quarantine Hospital, Quebec-West
MONTREAL, Que. ....	379 Common Street and Dorval Airport
VANCOUVER, B.C. ....	Immigration Building and Sea Island Airport
VICTORIA, B.C. ....	William Head, B.C.
GANDER, Nfld. ....	Gander Airport
THREE RIVERS, Que.....	Sub-stations under direction of Quarantine Officer in Charge of Quebec. There is a Quarantine Officer appointed in each port.
SOREL, Que. ....	
RIMOUSKI, Que. ....	
PORT ALFRED, Que.....	
SEVEN ISLANDS, Que.....	

### LABORATORIES OF HYGIENE

OTTAWA, Ont. ....	45 Spencer Street and Tunney's Pasture
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### OCCUPATIONAL HEALTH LABORATORIES

OTTAWA, Ont. ....	200 Kent Street Health Radiation Laboratory, Laurentian Building
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### PUBLIC HEALTH ENGINEERING DISTRICT OFFICES

TRURO, N.S. ....	515 Prince Street
MONCTON, N.B. ....	Post Office Building
MONTREAL, Que. ....	379 Common Street
ST. CATHARINES, Ont.....	4th Floor, Dominion Building
PORT ARTHUR, Ont.....	Post Office Building
WINNIPEG, Man. ....	Scientific Building, 425½ Portage Avenue
REGINA, Sask. ....	Federal Building
EDMONTON, Alta. ....	Post Office Building
VANCOUVER, B.C. ....	Begg Building, 110 West Georgia Street



**INDIAN AND NORTHERN HEALTH SERVICES FACILITIES**

(Numbers correspond to locations as per map appended)

**ADMINISTRATIVE OFFICES**

1	Head Office	102	Halifax
181	North Bay	130	Quebec City

**NURSE-DISPENSER**

291	Coral Harbour	508	Hanceville
510	Creekside	168	Long Lac
440	Fort Providence	137	Lorette
557	Fort St. James	419	Lower Post

**NURSING STATIONS**

290	Baker Lake (P)	105	Lake Harbour
133	Bersimis	204	Lansdowne House
207	Big Trout Lake	287	Little Grand Rapids (P)
441	Cambridge Bay (P)	286	Little Saskatchewan
106	Cape Dorset	191	Manitowaning
431	Coppermine	360	Mistawassis (Leask).
235	Cross Lake	257	Nelson House
413	Driftpile	334	Onion Lake
110	Eskasoni	205	Osnaburgh
358	Fort a la Corne	234	Oxford House
107	Fort Chimo	410	Peigan (Brocket)
184	Fort George	359	Pelican Narrows
434	Fort Good Hope	209	Pikangikum
435	Fort McPherson	185	Port Harrison
433	Fort Norman	258	Pukatawagan (P)
104	Frobisher Bay	183	Rupert's House
233	God's Lake Narrows	208	Sandy Lake
408	Goodfish Lake	407	Saddle Lake
414	Hay Lake	259	Split Lake
231	Island Lake	232	St. Therese's Pt.
356	Lac La Ronge	412	Stony (Morley)
206	Lac Seul	119	Tobique

**HOSPITALS**

427	Blackfoot (Gleichen)	328	Fort Qu'Appelle
428	Blood (Cardston)	426	Hobbema
295	Brandon	179	Lady Willingdon
400	Charles Camsell	579	Miller Bay
279	Clearwater Lake	198	Moose Factory
528	Coqualeetza	553	Nanaimo
297	Dynevour	353	North Battleford
298	Fisher River	253	Norway House
296	Fort Alexander	228	Sioux Lookout

## CLINICS

139	Caughnawaga	428	Blood (Cardston)
157	Deseronto	400	Edmonton
531	Duncan	296	Fort Alexander
437	Fort Smith	328	Fort Qu'Appelle
558	Hazelton	426	Hobbema
505	Kamloops	191	Manitowaning
357	Prince Albert	579	Miller Bay
160	Sarnia	198	Moose Factory
109	Sydney	353	North Battleford
256	The Pas	179	Ohsweken
500	Vancouver	528	Sardis
103	Pangnirtung	253	Norway House
292	Chesterfield	228	Sioux Lookout

## HEALTH CENTRES

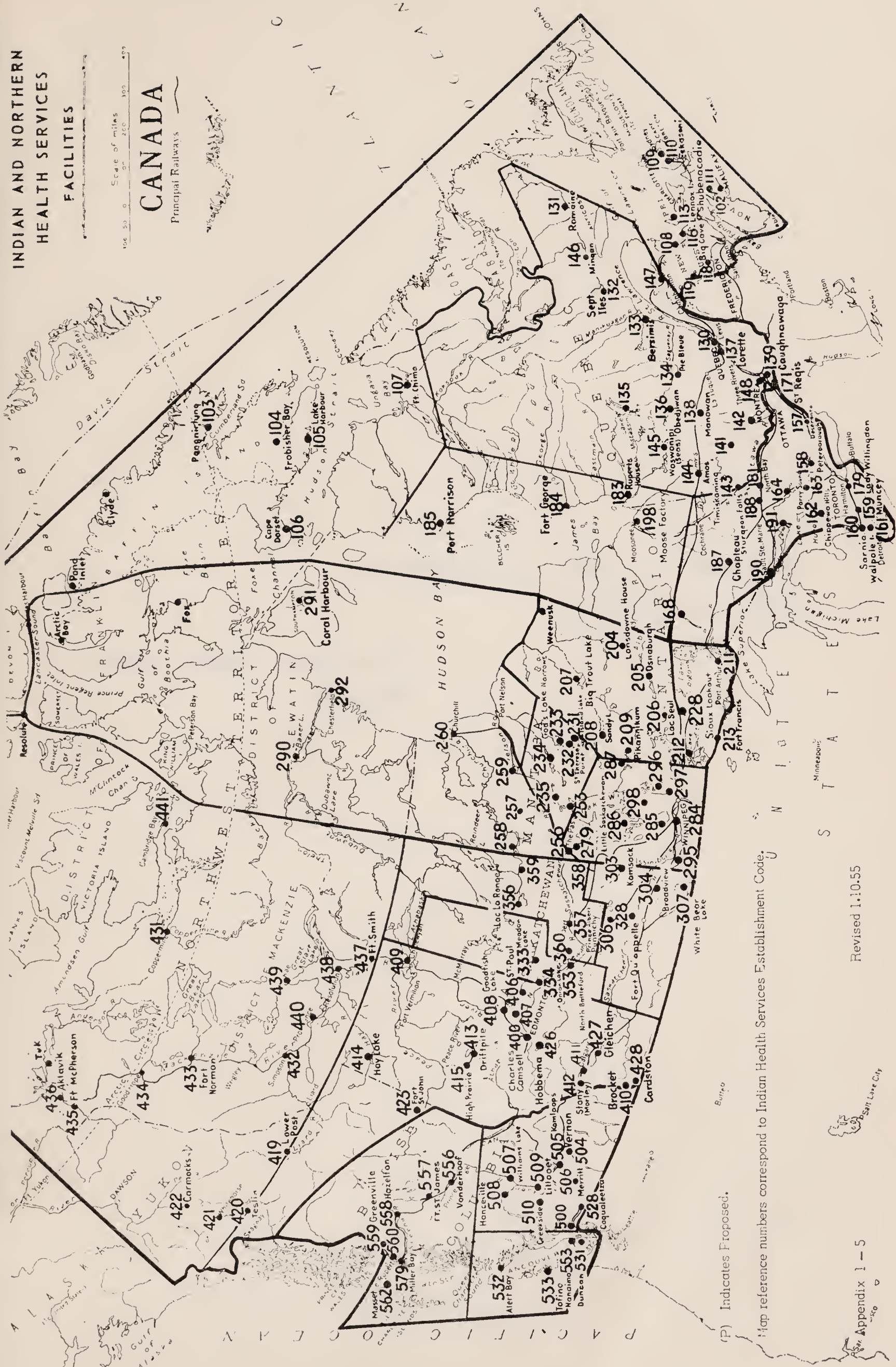
436	Aklavik	135	Mistassini (Seas.)
532	Alert Bay	159	Muncey
144	Amos	136	Obedjiwan
116	Big Cove	148	Oka
304	Broadview	163	Parry Sound
411	Calgary	158	Peterborough
422	Carmacks (Seas.)	134	Pointe Bleue (Roberval)
187	Chapleau	284	Portage la Prairie
108	Chatham (P)	211	Port Arthur
260	Churchill (P)	560	Fort Simpson
162	Chippewa Hills	306	Punnichy
164	Christian Island	141	Rapid Lake (Seas.)
409	Fort Chipewyan	147	Restigouche
213	Fort Frances	131	Romaine (Seas.)
439	Fort Rae	285	Sandy Bay
438	Fort Resolution	190	Sault Ste. Marie
423	Fort St. John	132	Sept Iles
432	Fort Simpson	111	Shubenacadie
559	Greenville	406	St. Paul
415	High Prairie	171	St. Regis
303	Kamsack	188	Sturgeon Falls
212	Kenora	420	Teslin (Seas.)
118	Kingsclear	143	Timiskaming
113	Lennox Island	533	Tofino
509	Lillooet	556	Vanderhoof
142	Maniwaki	504	Vernon
138	Manowan	161	Walpole Island
562	Masset	145	Waswanipi (Seas.)
333	Meadow Lake	307	White Bear Lake
506	Merritt	421	Whitehorse
146	Mingan (Seas.)	507	Williams Lake



INDIAN AND NORTHERN  
HEALTH SERVICES  
FACILITIES

Scale of miles  
100 50 0 50 100 200 300 400

CANADA  
Principal Railways



(P) Indicates Proposed.  
Map reference numbers correspond to Indian Health Services Establishment Code.

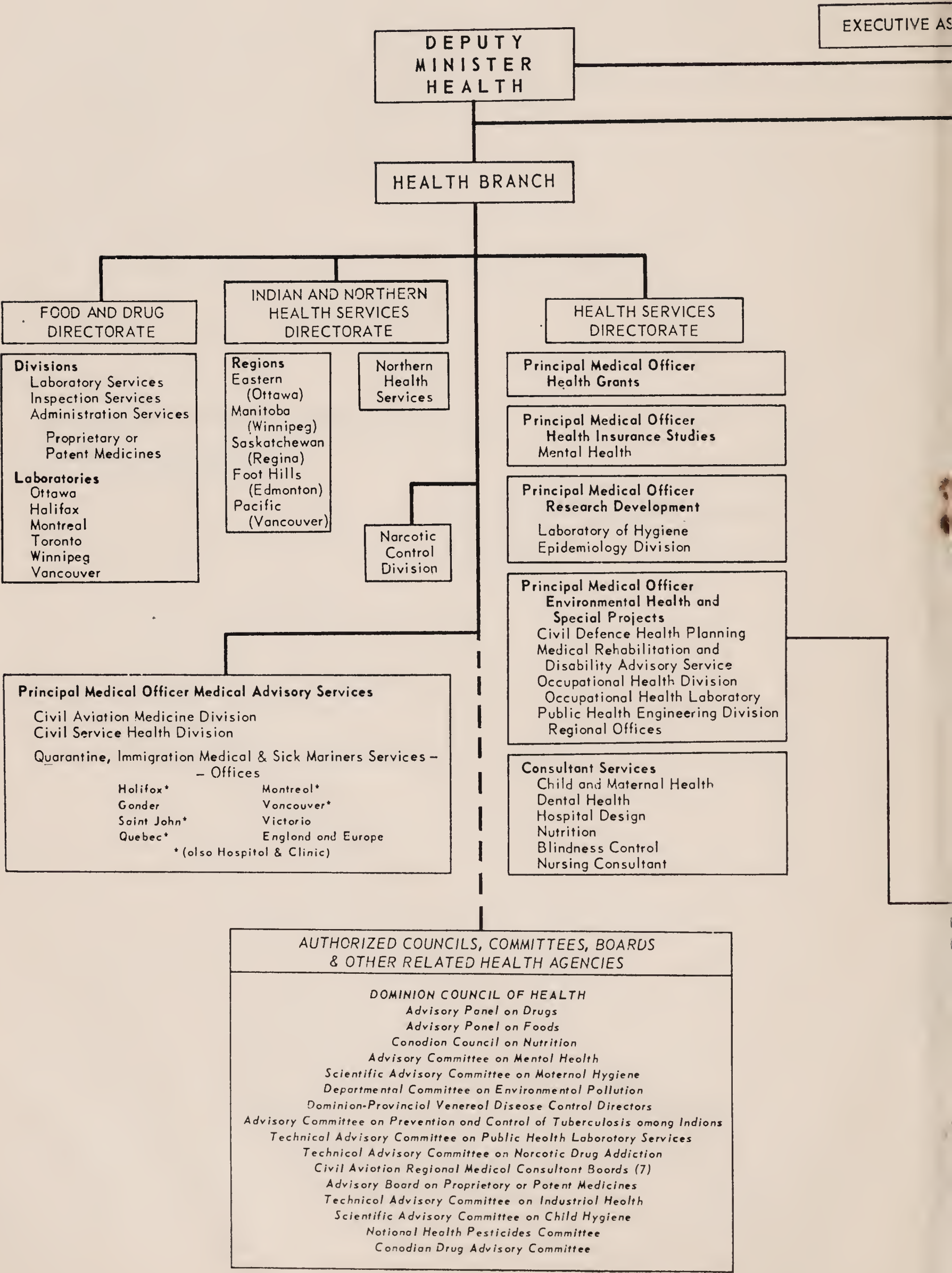
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